

INSIDE: A BRIGHT FUTURE FOR MONTANA FISHING

Montana Outdoors

MONTANA FISH, WILDLIFE & PARKS \$3.50

NOVEMBER-DECEMBER 2018

DON'T LET WINTER WIN

**GET OUT
THERE**

IN THIS ISSUE:

PERCH PICCATA

WOLVERINE WATCH

WE'RE ALL MILLIONAIRES HERE

AMERICORPS IN MONTANA STATE PARKS



Montana Outdoors

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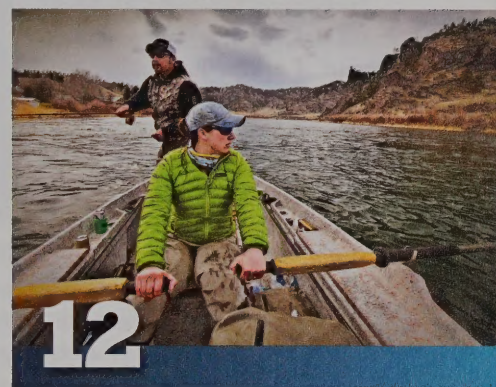
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RARE SIGHTING A wolverine pauses in Glacier National Park. See page 36 to find out where biologists discovered these elusive mountain carnivores in four northwestern states. Photo by Donald M. Jones.

FRONT COVER A family enjoys cross-country skiing near Bozeman. Winter is here, and the best way to survive is by meeting it head on. See how others enjoy winter on page 32. Photo by Erik Petersen.

Two-wheeled freeloaders?

I recently read the article on trails ("Connecting People to Great Places," July-August). It mentions the challenge of maintaining trails and the need to restore funds that have been cut and find new sources of revenue. I agree that trails need upkeep and that doing so costs money, but I have to point out that the two pictures on page 33 really say it all. The top one is a snowmobiler on Two Top Mountain. I've been there; the view is awesome. The snowmobiler pays a gas tax, registration fees, and trail permit fees, all of which contribute to the costs of trails. The bottom picture is of two mountain bikers—freeloaders, plain and simple. What are they contributing to build and maintain trails? When all users pay their fair share, that's when we will have better maintenance for all.

Jim Moran
Alanson, MI

Missed a few

I just finished reading your fine article on ducks. But you missed two species that live in Montana: the wood duck and the ruddy duck. Why not include those?

Robert D. Martin
Billings

Tom Dickson replies: Unfortunately, we lacked space to include those two wonderful species. Ruddy ducks are divers that live in large, deep lakes and rivers and are rarely taken by Montana hunters (though the birds taste great, ac-



cording to noted game chef Hank Shaw). Wood ducks ("woodies") are puddle ducks that nest in tree hollows and live along river backwaters and near beaver dams. They usually head south after the first few weeks of cold weather and thus make up only a tiny percentage of Montana's duck harvest.

Stronger deterrents needed

In the Letter's page of your September-October issue, a subscriber complains about quotes from FWP director Martha Williams in a sidebar to the article "A Century of Saving Birds" (July-August). The sidebar was about a new interpretation of the Migratory Bird Treaty Act (MBTA) by the U.S. Department of the Interior that will no longer allow prosecution of companies if "underlying purposes of that activity is not to take birds." The letter writer disapproves of Williams, previously a Department of Interior attorney, denouncing this new interpretation because it will result in the

deaths of more migrating birds. He advises Williams and everyone else who doesn't like the new interpretation to "park their cars, turn off power to their homes, and stop using all products and services that are produced and made from electricity and hydrocarbons."

During my 28-year career in natural resource protection, I worked on many incident responses, from local events to ones of national significance like the Deepwater Horizon oil spill. Many involved violations of the Migratory Bird Treaty Act. In no case did the responsible party intend that the "underlying purposes of that activity" was to harm birds. But they did harm birds (and other wildlife), sometimes by the hundreds of thousands. Their actions ranged from ignorance to carelessness to complete indifference. Many of the companies and other violators were fined and made to mitigate the damage to birds, something that otherwise tax-

payers would have had to pay.

My nearly three decades of experience showed me that self-regulation is not a successful wildlife-protection strategy when profits are involved. But knowing that you will be held accountable for the consequences of your actions, personal or corporate, can be a strong deterrent.

A.B. Guthrie said it best, back in 1973: "Leave the matter not to the great companies. Pay no heed at all to their promises....When they talk about the general benefit, keep in mind who benefits first. When they speak about reclamation, recall how they've fought our efforts for a cleaner and better environment."

Doug Zimmer
Aberdeen, WA

Corrections

In the September-October issue, we printed an incorrect phone number for Debbie Hohler, head of FWP's Upland Game Bird Enhancement Program. Her number is (406) 444-5674. In "What Duck Is That?" (September-October), we listed the daily bag limit for pintails in Montana for the 2018-19 season as one. It's actually two. In "Searching for Swift Foxes," in the same issue, the actual number of swift foxes in Montana estimated from a 2014-15 census was 175 to 300, not 1,000. And in that same issue, we wrote that the western larch was the region's only deciduous conifer, when in fact its high-alpine cousin, the alpine larch, also is deciduous.



Ruddy duck



Wood duck

Rest assured: We're still going strong

We've received many phone calls and emails from concerned subscribers who thought they read that Montana Outdoors is going out of business. We're not. The publication that announced its demise in August is the similarly named Montana Magazine. Rest assured that Montana Outdoors is here to stay and will continue publication for many years to come.

—Editor

Perch Piccata

By Jim Pashby | Preparation time: 10 minutes | Cooking time: 10 minutes | Serves 4



INGREDIENTS

2 T. olive oil
4 to 6 white fish fillets, about 1½ pounds total
Kosher salt and freshly ground black pepper
¼ c. flour
¼ c. white wine
3 T. lemon juice
2 T. capers
2 T. butter
2 T. chopped fresh parsley

DIRECTIONS

Heat the olive oil in a large sauté pan over medium-high heat.

While the pan is heating, blot the fillets dry with paper towels and season with salt and pepper.

Dredge in the flour, shaking off any excess.

Sauté the fish in the oil until just cooked through, about 4 minutes, flipping halfway through. Remove the fish to a platter.

Deglaze the pan with the white wine, whisking for about 1 minute. Add the lemon juice and capers and stir. Add the butter and whisk to bring the sauce together.

Pour onto the fish and garnish with the chopped parsley.

I love to fly-fish coldwater streams and rivers for trout. But as someone who grew up in the Midwest, I still have a soft spot for catching warmwater fish.

The thing is, most perch, walleye, bass, and other warmwater species live in lakes, and I don't own a boat. During summer, fish head to deep water, far beyond my reach. Except in spring and late fall, when they're near shore, I can't catch them.

Thank goodness for Montana's freezing temperatures, which turn lake surfaces to ice and allow anglers like me to walk right out to where the fish are.

Yellow perch are Montana's most popular and widely caught fish during winter. Abundant in ponds, lakes, and reservoirs across Montana, these cousins to walleye and sauger bite readily. Popular perch fisheries include Nelson and Holter Reservoirs, Lakes Placid and Mary Ronan, Tiber Reservoir, and Flathead and Nevada Lakes.

Getting started in ice fishing is easier and cheaper than you might think. For gear, you'll need a small spinning reel and a short jigging rod—sporting goods stores sell combo rigs for about \$30. You'll also need 4-pound-test line, a few ice fishing jigs, some maggots, and a plastic hole skimmer.

To find the best fishing spots, look for portable ice houses and anglers on stools. Ice anglers are friendly, so don't be shy about asking for advice.

Drill holes with a hand auger, which will run around \$50. Or buy one that attaches to an 18-volt cordless drill and bores holes in seconds. During the many years when I lacked a drill of my own, I use the openings created by other anglers the day before. I'd bring a hammer to break up the skim ice that had formed overnight.

Perch are delicious, with white, flaky meat. But they aren't big. Keepers run about 8 to 12 inches, so you'll need to catch a half-dozen or so, depending on the size, to feed four people.

This easy piccata recipe is a great way to prepare a mess of fillets. It also works well for walleye, drum, bass, and other freshwater species, as well as grocery store fish such as cod, tilapia, flounder, and snapper. 🐟

—Jim Pashby is a writer in Helena.



Preserving Montana's unique appeal

Not long ago while picking up my luggage at the Helena Regional Airport, I saw a newly arrived group of hunters waiting for their backpacks, duffle bags, and rifle cases. Men and women, teenagers and adults, they were all obviously thrilled to be in Montana. As they looked out the windows at the snow-dusted Big Belt Mountains in the distance, I could see awe in their grinning faces.

They were about to embark on the Montana outdoor experience.

One way to think about Montana Fish, Wildlife & Parks is that we exist to protect the "integrity" of that experience.

The Montana outdoor experience covers a lot of ground. Bordering Canada, we're a northern state, with frosty winter mornings, frozen lakes, and even a few glaciers. Our unique and diverse landscape consists of one-third mountains, one-third foothills and breaks, and one-third open range and grassland.

We're also a western state, with all the romance and lore that

68 state wildlife management areas.

The Montana experience means a person arriving here from Chicago or Houston can, within hours, head out to hunt elk, fish for trout, or backpack in some of the most beautiful surroundings in North America. It means that people who live here can hunt for subsistence, stocking the freezer with venison, waterfowl, and fish fillets. It means we can enjoy the outdoors year round by hunting, fishing, snowmobiling, skiing, boating, hiking, backcountry camping, and more.

This can be done in places resembling what the land looked like 100 or even 10,000 years ago. Montana still retains the Old West and the ancient. We're home to streams where prospectors panned for gold, the Old North Trail where First Peoples traveled for thousands of years, and prairies where saber-toothed tigers once stalked giant sloths.

Add all that up and you have the Montana outdoor experience.

It takes concerted effort to maintain the integrity of that experience. By integrity, I mean that Montana's outdoor recreation is based on healthy habitat, well-managed fish and wildlife populations, and customer-friendly state and national parks. Integrity is integral to the science that FWP uses to inform management decisions, the intact ecosystems that sustain fish and wildlife, and the personal honor and professionalism of our biologists and game wardens, who make sure the land and waters support the species people want to see and catch and that outdoor recreation is legal and safe. Integrity also applies to the relationships among landowners, agencies like ours, and the people who recreate in Montana's outdoors that lead to public access to private land, conservation easements that protect habitat and open space, and continued public support for ranching and farming.

Finally, from my perspective, there's the integrity of this agency itself, and our dedication to public service and our promise to be forthright, transparent, and trustworthy.

The Montana experience cannot be taken for granted. Preserving it requires work: conserving fish and wildlife habitat; protecting and preserving public lands

and waters; repairing and replacing aging trails, access roads, sewage and electrical systems, and other infrastructure; and managing the growing number of conflicts among the growing number of people enjoying Montana's outdoors.

At FWP, we can't protect the integrity of the Montana outdoor experience alone. In my next column (March-April 2019), I'll explain how we bring Montanans of diverse walks of life together to help us achieve that goal and ensure that, years from now, people arriving in Montana will still step off the plane with a huge grin, knowing they are about to experience something remarkable.

—Martha Williams, Director, Montana Fish, Wildlife & Parks



Maintaining the integrity of the Montana experience requires conserving habitat, protecting public lands, maintaining infrastructure, and managing conflicts.

comes from a heritage forged by Native Americans, cowboys, miners, and loggers. Montana is a wild place, too, where you can still see herds of pronghorn race across a prairie, or hike a wilderness mountain trail knowing that somewhere up there lives a wolverine or a lynx, or bull trout spawning in an icy tributary.

But the Montana experience is also about what Montanans and others have chosen to preserve here through conservation laws and coalitions that work hard to preserve much of what we cherish. That includes our renowned stream access law, 7 million acres of Block Management lands, 55 state and two national parks, 340 fishing access sites, eight national forests, 8 million acres of Bureau of Land Management property, 3.4 million acres of wilderness, and



ERIK PETERSEN

HAS HIS HANDS FULL

REGAN DEAN

Game Warden, Butte

AS THE BUTTE-AREA GAME WARDEN, I do a wide range of work throughout the year. During the summer, I patrol the Beaverhead and Bighole Rivers, checking outfitters and anglers and making sure boaters have their life jackets on board. I also visit backcountry lakes by horseback to check anglers.

In the fall I check bow and rifle hunters, answer trespass calls from landowners, and respond to TIP-MONT reports. In winter I'm out checking trappers, mountain lion hunters, and snowmobilers, as well as helping ranchers deal with big game damage.

Much of my work year round requires dealing with urban wildlife, such as tranquilizing and relocating nuisance moose, deer, and bears in Butte and other towns. I also do other wildlife work, like in this

photo where we're moving bighorn sheep that were part of a herd captured last winter by Quake Lake to another site as part of a translocation project. With me is my son, Seth, who volunteered to help. It was great for us to work together that day.

This is such a fun job, because it has so much variety and I meet so many interesting people. Just last week I was on horseback in the backcountry, checking archery hunters and looking for moose and mountain goats.

Being a Montana game warden is what I always wanted to do. It took 10 years after I graduated from college before I finally landed this job, but I never lost hope during that time. When I talk to schoolkids, I tell them to never give up on their dreams. 🐾



Sluice Boxes State Park

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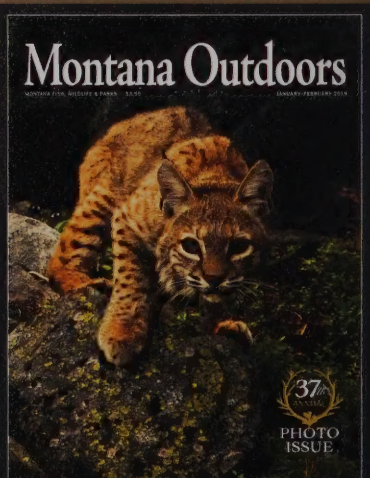
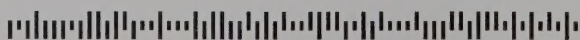
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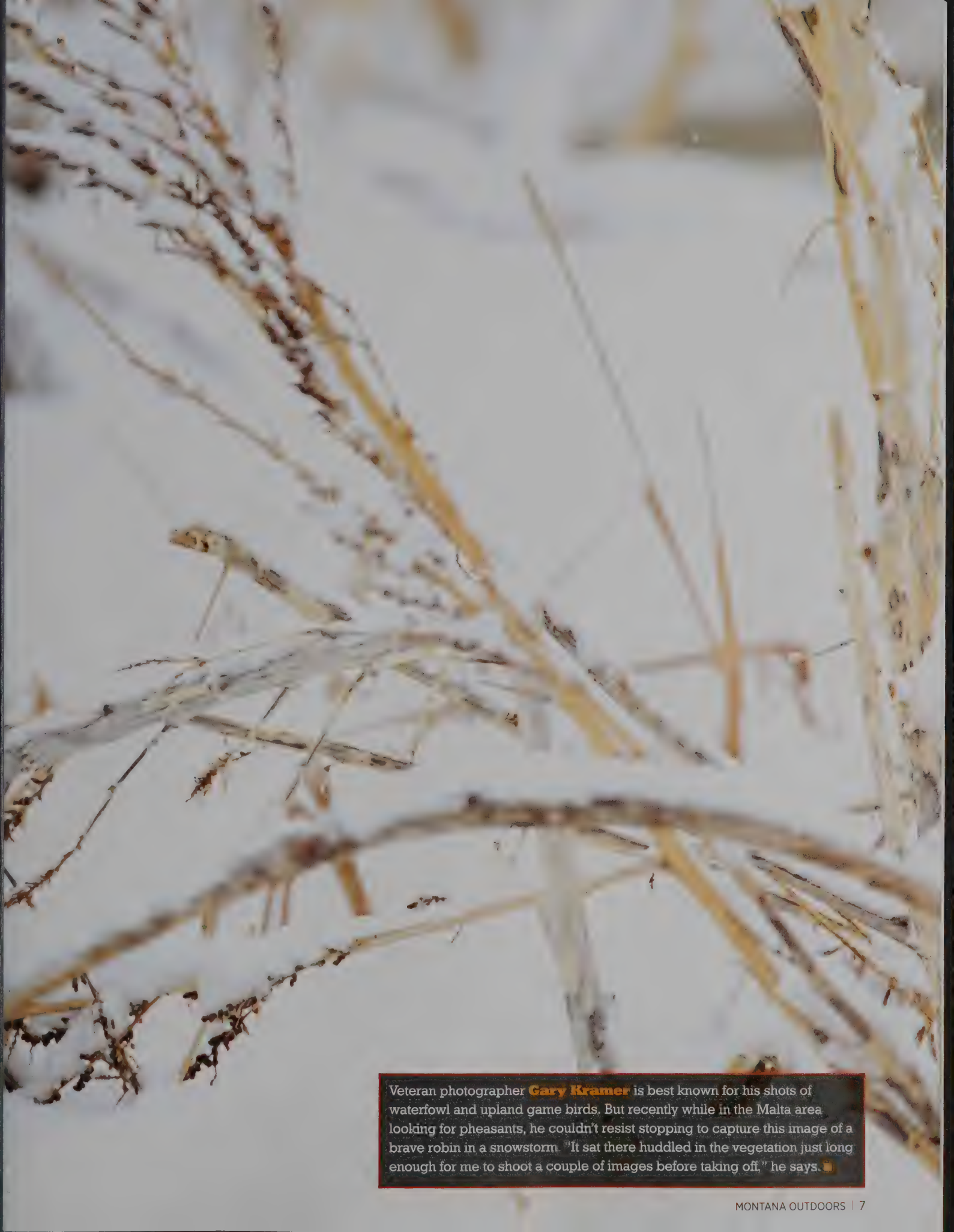


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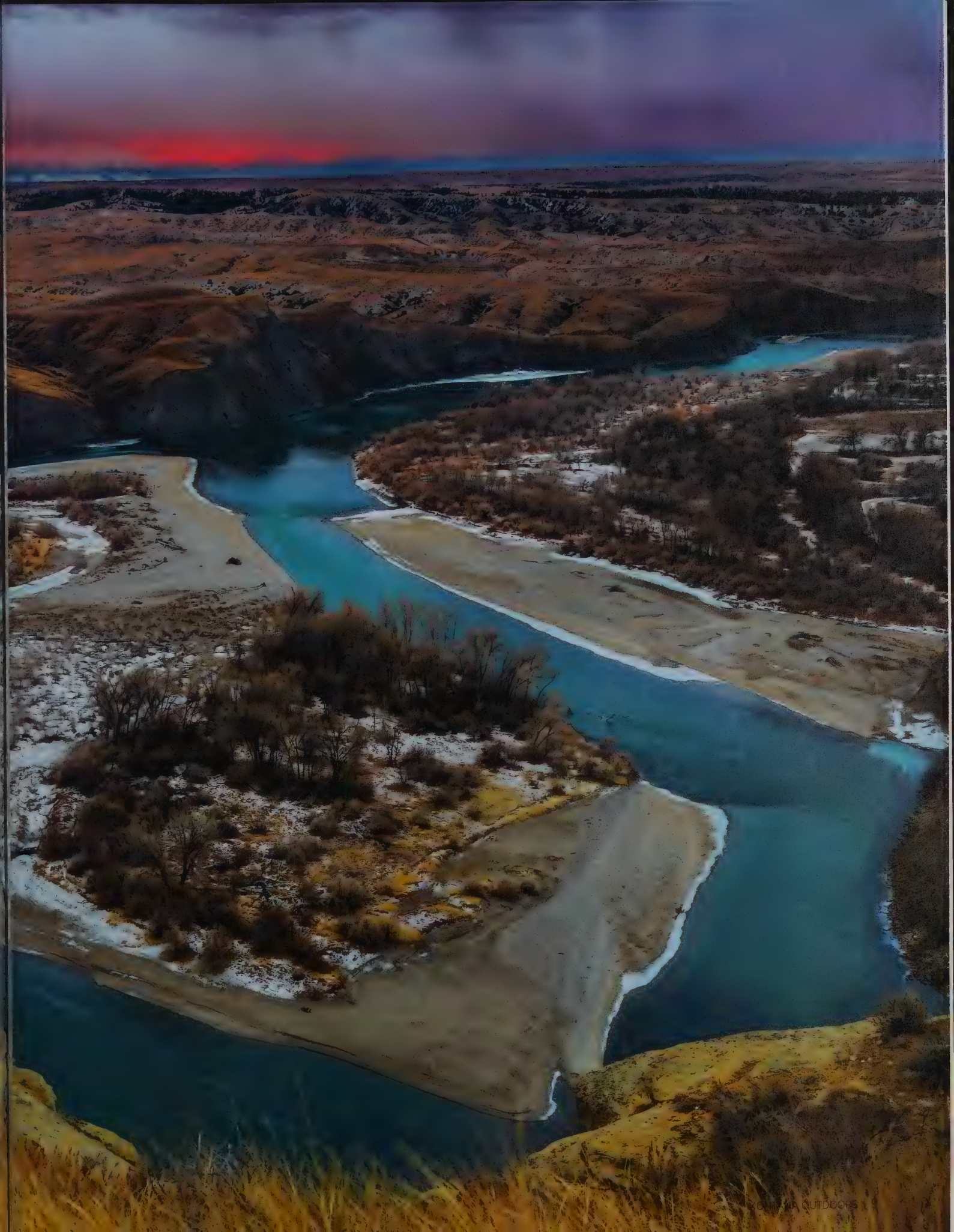


Veteran photographer **Gary Kramer** is best known for his shots of waterfowl and upland game birds. But recently while in the Malta area looking for pheasants, he couldn't resist stopping to capture this image of a brave robin in a snowstorm. "It sat there huddled in the vegetation just long enough for me to shoot a couple of images before taking off," he says. ■



SNAPSHOT

Cody Linde says he wasn't serious about photography until early one morning in mid-December when he decided to take this shot of the Yellowstone River just east of Billings at the Four Dances Recreation Area. "I've lived in Billings all my life but had never been there," he says of the site. "I saw it on Google Maps and thought it might make a cool sunrise photograph. I decided to go all-out on this one: I bought a tripod and really worked on the composition and lighting. I lucked out with the clouds that made that great red-orange horizon complement the sapphire blue water and tan grasses. I'm especially pleased with how the S curve of the river draws your eye right to the front of the image." ■





851

Montana wolf population,
based on latest estimates

(Source: FWP, with a 96% confidence interval at 673–1,062)

Snow sled season begins

Montana offers over 4,000 miles of groomed snowmobile trails on public land maintained by local clubs and chambers of commerce. The support comes from grants provided by FWP's State Parks Division, as well as the snowmobile gas tax, the Resident Trail Pass, and decal fees.

For trail maps, visit the Montana Snowmobile Association website (snowmobilemt.org).

In addition, millions of acres of federal land are open for unrestricted winter travel. (Check for motorized vehicle restrictions in specific areas.)

To legally use a snowmobile on public land, you must register your sled and display the registration decal. Adults must have a motor vehicle driver's license. Minors must have a Snowmobile Safety Education Course certificate (from Montana or another state) and be accompanied by an adult who is within eyesight.

Snowmobiles traveling through winter wildlife habitat can disturb or displace the animals. To reduce possible harm to the habitat and wildlife:

- ▶ stay well clear of areas closed for wildlife protection;
- ▶ don't linger around wildlife; and
- ▶ never chase or harass wildlife.



HUNTING

How jerks ruin hunter access

Jerks exist in any outdoor activity. But in hunting, they can actually reduce opportunities for others. That's because hunters who disrespect landowners and private property can cause ranchers, farmers, and others to close their gates to the public for hunting and other recreation.

"A minority of hunters do these things, but it still creates problems for everyone else," says Jason Kool, FWP's Access Bureau chief.

Kool says FWP has begun a new public information campaign this hunting season to remind hunters about ethical behavior when on private land. "Hunters need to show private property and landowners respect and understand that hunting private land is a privilege," he says. "The first thing: Always ask permission. Then be sure to keep your vehicle on designated roads or trails, don't leave the remains of field-dressed animals in public view, and leave gates as you found them—open or closed."

According to Kool, landowners increasingly point to hunter misbehavior as a reason for cutting off public access. "Someone tears up a muddy trail or road, or they leave a gate open and cattle get mixed up or out. It quickly wrecks it for everyone else. There is no quicker way to close a property than



through poor hunter behavior," he says.

Kool adds that FWP field crews also report plenty of shot-up Block Management signs and sign-in boxes. "When landowners see signs riddled with bullet holes or sign-in boxes destroyed, it's not hard to imagine what they must think about those hunters," he says.

To promote ethical hunting, FWP is providing free "Ask for Access" bumper stickers at the agency headquarters and regional offices. The department has posted billboards and run newspaper ads statewide. Hunters are encouraged to use the hashtag #Ask4Access to report hunting jerks in action. ■

FISHING

Browns are getting more aggressive by the week

Look closely at photos of anglers holding trophy brown trout on many Montana rivers and you'll notice something similar in the background: trees with yellow leaves, or no leaves at all.

That's because most big browns are caught in October and November, when fish are moving upstream to spawn and will aggressively chase large streamers. The same finicky browns that ignored your dry flies and nymphs all summer start hammering big patterns like the Bunny Leech and Conehead Woolly Bugger.

According to Brian McGeehan, owner-outfitter of Montana Angler Fly Fishing in Bozeman, peak fishing on the run above Hebgen Reservoir in Yellowstone National Park is usually the third week of October. Monster browns on the Missouri River below Hauser and Holter Dams usually don't start chasing streamers until November. "If you want to move fish over 24 inches, make sure you are stripping the biggest streamers you can find," he says. "I usually have to tie my own tandem-hook streamers around 10 inches long. These massive flies are best fished on a 7- or 8-weight."

The Missouri and Madison are the most famous for late fall brown trout fishing, but any river that holds browns will fish well once the weather turns cold, up until about Thanksgiving. ■

In fall, the bigger the pattern, the bigger the brown.



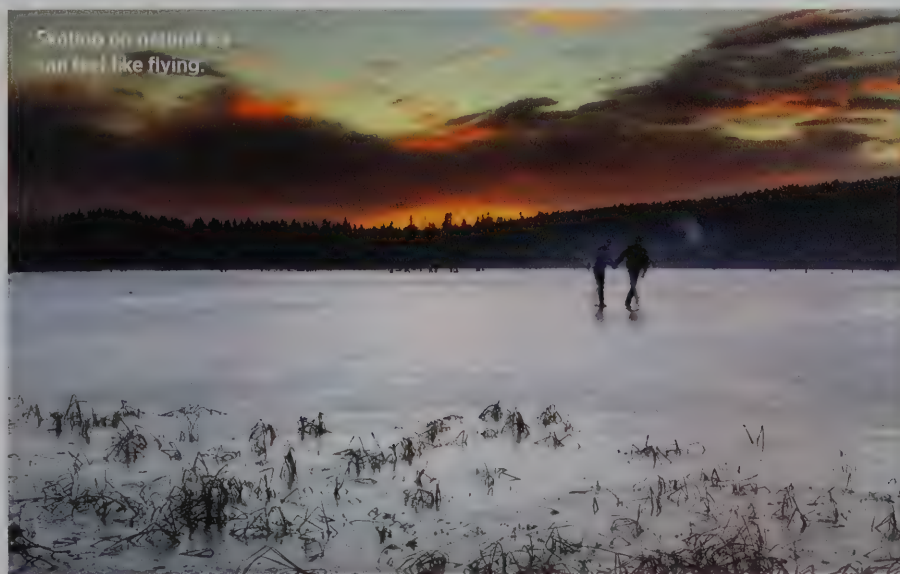
WINTER RECREATION

Skate on "wild" ice

Ice skating on an indoor or park rink is fun, but skating on a glass-smooth frozen lake, pond, or reservoir can be otherworldly. When conditions are right—an even surface with no snow—it feels like flying. Sometimes "wild" ice is clear enough to see water, and even fish, below.

One of Montana's top spots for wild ice is Canyon Ferry Reservoir north of Townsend. Steady winds create vast snow-free areas sometimes a mile long. Other wild-ice skating opportunities include Freezeout Lake, Hauser and Tiber Reservoirs, Whitefish Lake, and the bays of Flathead Lake and Fort Peck Reservoir.

Be safe. Skate only on ice four inches or thicker. (A good sign that ice is safe enough



for skating is the presence of vehicles.) Stay clear of open water or spots where springs enter and create weak ice. Skate with others. Carry ice-rescue picks—"claws"—and know

how to use them.

To learn where ice is thick enough and free enough of snow for natural outdoor skating, visit facebook.com/WildIceMontana/. ■



THE HEALTHY GOOSE

Each year the outdoor recreation industry produces “golden eggs” worth more than \$7 billion to Montana’s economy.

Are we reinvesting enough into natural resources, infrastructure, and conflict resolution to sustain that economic bounty?

BY TOM DICKSON





OUTDOOR RECREATION IN MONTANA CONTRIBUTES
\$7.1 BILLION

IN CONSUMER SPENDING ANNUALLY

Includes spending on gear, lodging, food, and travel

Source: Outdoor Industry Association

REINVESTMENT OPPORTUNITY:

**Clean public recreation lands trashed by
increased public use and growing vandalism.**

In 2018, crews at the Helena-Lewis and Clark National Forest reported removing more than 3,200 pounds of abandoned furniture, campers, tires, roofing material, and even a freezer full of rotting meat. Cleanups and vandalism repair in national forests and state parks use up money needed to repair trails, improve parking, and otherwise enhance visitor experiences.



I never considered that clean, functional toilets at state parks had much, if anything, to do with Montana's economy.

I learned otherwise earlier this fall while touring Lewis & Clark Caverns State Park with park manager Rhea Armstrong and maintenance supervisor Bill Foreman.

Sitting at 5,000 feet amid rolling hills of sage and mountain mahogany, Montana's first state park overlooks the Jefferson River valley about 20 miles southeast of Interstate 90 between Bozeman and Butte. In addition to some of the largest and most beautiful limestone caves in the Northern Rockies, the park features a spacious, tree-shaded campground, 10 miles of hiking trails, and a collection of structures that together make up a National Historic District.

Known as "the caverns," the park is a local economic engine, attracting 800 visitors a day in peak season to an area otherwise visited only by mule deer and turkey vultures. Tourists driving to and from the nationally designated park stop to eat, buy gas, or spend the night at nearby Three Forks, Cardwell, and other small towns. "It's definitely a big draw for the entire area,"



CLOGGED Lewis & Clark Caverns maintenance supervisor Bill Foreman shows a restroom septic pipe filled with mineral scale.

says Whitehall mayor Mary Hensleigh, who worked as a caverns guide during summers in the early 1970s.

Armstrong tells me that park attendance has climbed every year since she was hired as assistant manager in 2005 (she became manager in 2016). That has strained "beyond capacity" the park's infrastructure,

particularly the restrooms, known as comfort stations. Foreman shows me a 50-year-old piece of sewage pipe so filled with mineral scale he can hardly fit a pencil through the tiny opening.

It doesn't take much imagination to envision what that means when campers need to use the facilities.

Three miles up a winding road at the cave entrance, portions of another comfort station are regularly closed. Installed a half-century ago, the septic system strains to handle the growing crowds. "One of these days it's going to go," Armstrong says. The cost to replace the ailing system: \$1 million. "The longer you wait to deal with infrastructure problems, the more expensive it gets," she says.

The good news is that parks visitation, hunting, downhill skiing, hiking, snowmobiling, boating, and other outdoor recreation generate \$7.1 billion per year in consumer spending in Montana, according to a 2017 Outdoor Industry Association (OIA) report. That makes outdoor recreation second only to health care as an economic driver in the state. But much of the infrastructure that supports all this outdoor activity—septic and electrical systems, roads, trails, campgrounds, fencing, and signage—is failing. It, along with the fish and wildlife habitats that also help fuel Montana's lucrative outdoor recreation industry, need greater reinvestment, say outdoor recreation experts. "We have outdoor amenities here that other states can only dream about," says Rachel VandeVoort, director of Montana's new Governor's Office of Outdoor Recreation. "But we definitely need to ramp up the stewardship of the resources and infrastructure that support all those amenities."

If Montana's outdoor economy is a goose



Montana's outdoor recreation economy

Activities that contribute to the \$7.1 billion in annual spending across the Treasure State each year:



CAMPING
RV campsite
Tent campsite
Rustic lodge



FISHING
Stream
River
Pond
Lake/Reservoir



MOTORCYCLING
On-road
Off-road



OUTDOOR RECREATION IN
MONTANA CONTRIBUTES

71,000

DIRECT JOBS

Source: Outdoor Industry Association

REINVESTMENT OPPORTUNITY:

**Repair and improve chronically
outdated and failing infrastructure.**

State and federal parks, national forests,
and other public recreation facilities
are crippled by potholed access roads,
eroding trails, overflowing sewage
systems, faulty electrical lines, leaking
roofs, crumbling buildings, and other
failing infrastructure.



SNOW SPORTS

Cross-country skiing
Downhill skiing
Snowboarding
Snowmobiling
Snowshoeing



OFF-ROADING

ATV
ROV
4x4



TRAIL SPORTS

Day hiking
Backpacking
Rock/Ice climbing
Horseback riding
Trail running



HUNTING

Rifle
Shotgun
Bow



WATER SPORTS

Kayaking
Rafting
Canoeing
Boating
Paddleboarding



WHEEL SPORTS

Cycling
Mountain biking
Skateboarding



WILDLIFE VIEWING

Birding
Big game
Photography



laying \$7 billion worth of golden eggs each year, common sense suggests keeping that goose healthy.

THEY PAY TO PLAY

Driven by a growing population, more retiring yet active baby boomers, and lower gas prices, outdoor recreation is increasing across Montana at a record pace. Some 4.1 million people visited Yellowstone National Park in 2017, the second highest number

Tom Dickson is editor of Montana Outdoors.

ever. In Glacier National Park, a record-breaking 3.3 million visitors last year marked an increase of 50 percent from a decade earlier. Montana's state parks visitation has grown by 40 percent over the past 10 years.

City parks are being used more, too, by tourists and especially residents. Amy Teegarden, city of Helena Parks and Recreation director and a past chair of the Montana Trails, Recreation and Parks Association, says public demand for trails and other outdoor recreation amenities is growing in communities across the state.

"Here in Helena, 80 percent of the trail use is local, which tells me we have a very active local community," she says.

All that outdoor activity is good news across the board. According to the Colorado-based OIA, the more than \$7 billion that Montana tourists and residents spend to hike, hunt, ski, snowmobile, horseback ride, fish, boat, and more supports 71,000 jobs that pay more than \$2.1 billion in wages and contribute \$286 million in state and local tax revenue. What's more, "outdoor recreation is economic diversification," says VandeVoort.



We grow by attracting and retaining a world-class workforce of cool, smart, talented people, and we find that those people are attracted to the great access to outdoor recreation that we have in Montana."

every weekend they can hike, hunt, fish, and ride their ATVs," says Lance Trebesch, president of TicketPrinting.com, an online event-ticket printing company that employs 28 people in Harlowton.

A 2017 University of Montana Bureau of Business and Economic Research report found that companies use Montana's vast outdoor recreation opportunities to lure valuable employees.

"We grow by attracting and retaining a world-class workforce of cool, smart, talented people, and we find that those people are attracted to the great access to outdoor recreation that we have here in Montana," says Michael Sanderson, president and CEO of Sanderson Stewart, a civil engineering firm with offices in Billings and Bozeman.

Manufacturing jobs also benefit from the outdoor recreation boom. Bozeman-based Simms Fishing Products produces fishing waders in a 60,000-square-foot facility and employs 180 workers. Missoula-based Chilton Skis builds high-end backcountry skis sold worldwide.

While growth in some traditional outdoor activities such as fishing and hunting has stabilized, those activities still contribute greatly to the overall outdoor recreation economy. Studies by FWP and the U.S. Fish & Wildlife Service show that elk, deer, and antelope hunters alone spend \$324 million in Montana each year, an economic influx that supports 3,300 jobs. In 2017, anglers spent \$919 million in Montana on gear, food, lodging, and travel.

Thank Montana's snowcapped mountains, wildlife-rich prairies, and fish-filled waters for much of that economic input. But VandeVoort notes that credit also goes to res-

idents who've worked to sustain the state's outdoor-based lifestyle. "We have the best stream access law in the nation, we allow recreation on state lands, and we build and sustain private-public partnerships like Block Management and conservation easements," she says. "Fisheries, wildlife, trails, parks, access to forests and wilderness, our open space—all that comes from people working with each other to make Montana so livable and attractive to tourists."

STRAINING THE SYSTEMS

It also comes from dutiful management. And it costs money. For public agencies charged with providing outdoor recreation amenities, increased participation and use is taxing infrastructure, staffing, and budgets.

Straining under soaring wildfire-fighting costs across the West, the U.S. Forest Service lacks sufficient funds and staff to clean campsites, clear trails, remove garbage, and service outhouses, including on the eight national forests in Montana (which provide 18,000 miles of trails and 238 campgrounds). According to a 2017 U.S. Department of Agriculture report, the country's national forest road maintenance backlog alone is \$3.2 billion—not surprising to anyone who has driven the teeth-chattering routes to some trailheads.

Glacier National Park reports that toilets at Logan Pass now need to be pumped four times per day, compared to just twice a few years ago. Traffic on Going-to-the-Sun Road sometimes backs up for miles while crews repair its historic stone bridges. Glacier and Yellowstone National Parks report a combined maintenance backlog totaling nearly \$700 million, and Montana's 55 state parks face \$22 million in deferred maintenance. The state parks' backlog includes a decrepit boat dock at Flathead Lake's Big Arm State Park, inadequate water systems at Lone Pine in Kalispell, and crumbling roofs and window sills on historic buildings at Bannack.

On top of that are increased garbage cleanup and vandalism repair costs. The

OUTDOOR RECREATION IN MONTANA CONTRIBUTES

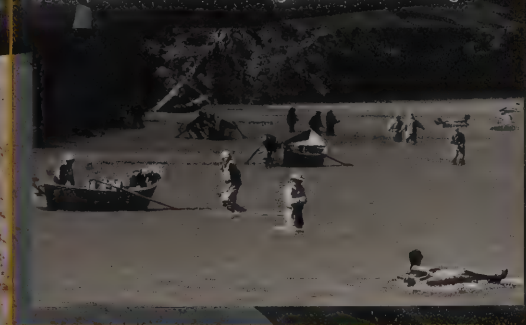
\$2.1 billion
IN WAGES

Source: Outdoor Industry Association

REINVESTMENT OPPORTUNITY:

Make up staff shortages and manage growing recreation and wildlife conflicts.

The BLM, USFS, and National Park Service have seen staff cuts of 10 to 39 percent over the past two decades even as public use has soared. That growing use also leads to river crowding, grizzly conflicts, and other problems that state agencies must manage.



"It's not replacing anything or pushing any other industry out. Traditional timber, ag, and coal towns can still be who they are, plus have all that added economic benefit."

LURING THE TALENT

At a time when many Americans are cut off from the natural world, access to Montana's great outdoors is a huge incentive for workers. That's especially true for tech companies, which pay twice the median wage. "Our team loves it here, surrounded by the Little Belts, Snowies, and Crazies, where

“We have outdoor amenities here that other states can only dream about. But we need to ramp up the stewardship of the resources that produce those amenities.”

Helena-Lewis and Clark National Forest reports having to pay more than \$25,000 each year just to pick up and dispose of abandoned furniture, campers, tractor tires, roofing materials, and TVs.

Once used almost exclusively by hunters, state wildlife management areas are now also visited by mountain bikers, hikers, and campers. The increased use contributes to problems with human waste, unauthorized roads and trails, and wildfires. At Montana state parks, vandals have burned latrines, torn up sprinkler systems, and ripped down signs. “The cost to clean that up is money we can’t spend to maintain trails, mow lawns, and otherwise improve the visitor experience,” says Beth Shumate, head of the FWP State Parks Division.

Chronic staffing shortages add to agencies’ woes. From 2010 to 2015, congressional funding cuts forced the Bureau of Land Management, which administers 8 million acres in Montana alone, to reduce staff by more than 20 percent nationwide. The U.S. Forest Service saw its overall staff decline by 39 percent from 1998 to 2015. Over the past seven years, national parks have had to cut staff by 11 percent despite a 19 percent increase in visitation.

“In many places we’re basically running on volunteers,” says Shumate about Montana’s state parks. Only eight employees manage the five parks on Flathead Lake, which attract tens of thousands of visitors each year; the workload requires an additional 20 volunteers. Travelers’ Rest State Park relies on a dozen volunteers to help its one employee manage the flocks of Lewis and Clark fans that visit the site.

Then there’s the growing number of conflicts among the crush of visitors—like the fistfights reported last summer at Glacier National Park’s popular Logan Pass parking lot, which fills each morning by 8:30 a.m. Cross-country skiers, snowshoers, hikers, and snowmobilers jostle one another for limited trails in winter, while hikers, moun-

tain bikers, and horseback riders do the same once the snow melts. Hunters and private property owners litigate over blocked access to public lands. On rivers at Montana’s fishing access sites, tempers flare over boat ramp crowding, while wade anglers, drift boaters, and a growing number of kayakers and inner-tubers compete for limited space between banks. “Managing and regulating the avalanche of increased recreation that’s here now and coming down the pike takes money and staff we simply haven’t needed before,” says Paul Sihler, FWP chief of staff.

REINVEST IN MONTANA

How can Montana maintain the integrity of the outdoor experience so valuable to residents, visitors, and the state’s economy? VandeVoort says Montanans need to continue supporting traditional methods of funding public lands, waters, infrastructure, and access while finding new ways to reinvest in those resources. Amy Roberts, OIA executive director, calls on lawmakers to adequately fund federal, state, and local parks, campgrounds, and trails management and maintenance. “The agencies we rely on to maintain this infrastructure are all facing a budget crisis,” she says. Teegarden, Helena’s parks chief, says Montana might want to consider a statewide recreation tax to generate funds to help local and state agencies provide and maintain outdoor recreation. For instance, a surcharge of just 1 percent of the \$7.1 billion in spending would generate \$71 million each year.

Conservation groups like the Montana Wildlife Federation are calling for full funding of the Land and Water Conservation Fund.

OUTDOOR RECREATION IN MONTANA CONTRIBUTES
\$286 million

IN STATE AND LOCAL TAX REVENUE

Source: Outdoor Industry Association

REINVESTMENT OPPORTUNITY:

Support state and federal programs that protect and improve habitat and provide access.

Fish and wildlife habitat is threatened by invasive plants and animals such as spotted knapweed and foreign mussels. It’s being fragmented from increased housing and other development and is being altered by climate change. Lack of public access to public land continues to be a major concern of hunters, hikers, and others.

Though it can’t be used for maintenance, the popular federal program creates and protects outdoor amenities and natural resources across Montana, ranging from recreation areas in Miles City to elk habitat in the Helena-Lewis and Clark National Forest.

Unless recreation is re-prioritized to a higher level, state and federal agencies could be forced to limit access to recreation sites or even shutter them altogether, according to Montana’s 2014-2018 Statewide Comprehensive Outdoor Recreation Plan. Budget and staffing woes could even lead to



public land transfers or privatization. The Utah-based American Lands Council has cited strains on national parks and forests in its call for transferring federal lands to state ownership. Bozeman-based Property and Environmental Research Center has suggested allowing private companies to manage Yellowstone, Glacier, and other national parks as franchises under strict park brand guidelines, the same way chain restaurants and hotels are managed.

Back at Lewis & Clark Caverns, I stop at the campground comfort station on my way

out of the park. Everything is working fine. But I recall how, just an hour earlier, maintenance supervisor Bill Foreman showed me where, lacking funds to replace a failing urinal, he'd wedged a two-by-four between two pipes to stop a leak. "I'm a MacGyver type," he'd said. "I can repair just about anything that breaks down. But at some point, it just makes sense to stop doing patch-up jobs and invest in things that are no longer working."

Foreman's words apply not just to infrastructure but also to the natural systems that sustain Montana's healthy recreation econ-

omy. As VandeVoot says, "Public wildlife, parks, and land management agencies provide the stewardship that keeps the wheels on this economic bus and sustains our way of life," she says. "In the outdoor recreation industry, conservation and sound economics go hand in hand."

Considering all we have inherited from previous generations of forward-thinking Montanans, and how valuable those resources are to our culture, lifestyle, and economy, maintaining that long conservation tradition seems like a wise and worthy investment. 🐾

AmeriCorps workers improve themselves—and their job prospects—while helping make Montana's state parks better places to visit.

BECOMING BETTER

BY LAURA LUNDQUIST



In 2015 Jacob Jost was grinding out 50-hour work weeks as a mortgage broker in Las Vegas. Between meetings and emails, he dreamed of a completely different life, one without fluorescent lights and ringing cell phones. “I was making good money, but I realized what I really wanted was a career in the outdoors,” he says. Not knowing what that entailed, Jost decided that becoming a park ranger would combine his passion for the outdoors with his desire for public service. “I Googled ‘How to become a park ranger.’ That led me to AmeriCorps and Montana State Parks.”

After working a two-year AmeriCorps stint at state parks near Seeley Lake and then two state parks jobs, Jost, 30, is now a ranger for the Bureau of Land Management. He works at Log Gulch Campground on Holter Reservoir near Helena. “I’ve always wanted more adventure in my life, and now I have it,” he says. “Everything

I’m doing is what I wanted to do. I haven’t had a bad day yet.”

STATESIDE PEACE CORPS

Congress founded AmeriCorps in 1993 as the stateside equivalent to the Peace Corps. Qualified individuals are matched with employers that need help with everything from designing and teaching education programs to digging wells. The organizations usually have tight budgets and limited staff and need cost-effective ways to hire quality help.

Because AmeriCorps has a reputation for working mostly on inner-city poverty projects, people are surprised to learn that participants are also getting their hands dirty in state parks. It’s still a relatively new development for state parks’ staff, too. Ken Soderberg, Montana Fish, Wildlife & Parks’ State Parks Division operations chief, says

the agency didn’t realize AmeriCorps was a possible manpower resource until 2011. At the time, the division was facing unforeseen expenses and needed to recruit more volunteers. The Governor’s Office of Community Service suggested AmeriCorps. “It turns out our program fits within the AmeriCorps objectives of environmental stewardship,” Soderberg says. “Once we got the grant in 2012, we worked with our park managers to identify appropriate projects for AmeriCorps service members.”

Each year since, roughly 20 AmeriCorps members have eased park managers’ burdens by creating interpretive trails, controlling invasive weeds, teaching in outdoor classrooms, organizing volunteer events such as spring cleanups, and more. “Many of us oversee two or more parks, so we greatly appreciate the additional help,” says Ryan Sokoloski,

Laura Lundquist is a writer in Missoula.

MOVING OUT—AND UP

Previously a Las Vegas mortgage broker, Jacob Jost traded his desk job for a position working for Montana State Parks through AmeriCorps. He's now a ranger for the Bureau of Land Management in central Montana.

*"I wanted more
adventure in
my life, and
now I have it."*



who manages several parks in western Montana.

AmeriCorps service members receive an allowance of \$13,700 over a 44-week term of service to cover basic living expenses. They also qualify for an educational award of up to \$6,000 when they complete their term. As is the case with Peace Corps service members, full-time (1,700 hours over 12 months) AmeriCorps members are eligible for student loan deferments, health care benefits, and child care assistance. They must be at least 18 years old and have a high school diploma or GED. Most spend a year or two in AmeriCorps after graduating from college. The program is funded by an independent federal agency and administered in Montana through the Governor's Office of Community Service. "It's a great way to gain job skills, earn money for education, and help local communities," says Joe Naiman-Sessions, who coordinates the FWP program. "Many [AmeriCorps service members] have told us their work

also gives them a strong sense of stewardship in our state parks."

COMMUNITY INVOLVEMENT

AmeriCorps service members regularly interact with the communities surrounding



BIRDS OF A FEATHER AmeriCorps service members Savannah Sloan and Lena Fontana take a break between events at Makoshika State Park's Buzzard Day event.

the state parks where they work. Ryan Timmerman graduated from St. Olaf College in Minnesota before joining AmeriCorps in 2012 and working at Chief Plenty Coups State Park, near Pryor on the Crow Indian Reservation. After he arrived, tribal members invited Timmerman to a sweat lodge, where he took part in the traditional healing and cleansing ceremony. At the park, he helped test water and taught visiting students about local natural history and the famous American Indian leader for whom the park is named.

State parks rely on AmeriCorps service members for presenting and interpreting human and natural history to park guests, local students, and others. Statewide, AmeriCorps members offer a total of 500-plus educational and interpretive programs each year, in which 12,000 to 16,000 youth and adults attend. "I'm in touch with more than 300 teachers in our area, and I hear how AmeriCorps makes the state parks education programs function," says Laura Law, educational specialist at Glacier National Park.



NO LACK OF PROJECTS

AmeriCorps service members can choose from a wide range of work opportunities at various state parks. Clockwise from top: Victoria Miera and Josh Parken give a presentation on the Corps of Discovery at Travelers' Rest State Park; a crew installs an interpretive sign at Lewis & Clark Caverns State Park; Brian Turner pulls invasive mullein.



Teresa Wenum, conservation education specialist at Flathead National Forest, says, "I've really been impressed with the enthusiasm and high level of skills and energy the Lone Pine State Park AmeriCorps members show in developing and carrying out events and programs."

INNOVATION ENCOURAGED

Sokoloski says AmeriCorps service members not only work on projects that he and other managers identify but are also encouraged to come up with new ideas for

improving visitor experiences, solving infrastructure problems, and helping parks save money. He says Jost suggested an idea to make it easier for more people to take advantage of the many camping opportunities at the parks where he worked. "Some people love the idea of camping but are intimidated by all the gear they need, so they don't go," Sokoloski says. "Jacob suggested that we provide the gear at a low cost. We came up with the idea of 'Camp in a Trunk.' For \$10, we supply everything for a family of four to go camping."

The trunks had barely made their debut at two Seeley Lake valley state parks in 2017 when families started asking for them. Sokoloski says the rental camping gear is becoming increasingly popular as more people learn about it. "The kits have been a big hit and are doing what Jacob envisioned—getting more people out camping," he says.

Work experience and personal contacts gained through AmeriCorps can further service members' careers. While at Lone Pine State Park, Laura Rognerud, from Minnesota, earned enough educational

*"I am the person I
want to be because
of AmeriCorps."*



grant credit through AmeriCorps to pay for nearly a semester of college online classes. She's now pursuing a degree in criminal justice in hopes of landing a career in wildlife law enforcement. Between pulling knapweed and creating new trail maps at the park, Rognerud talked to area FWP



FOSSIL FINDER Working with Museum of the Rockies paleontologists, Ayleen Gutierrez helps identify and categorize fossils at Makoshika State Park. AmeriCorps service members often find work opportunities at Montana state parks within their areas of interest but can also branch out into additional fields.

game wardens about their jobs and her prospects for future employment. "I plan to keep an eye on upcoming state and national park positions," Rognerud says. "That was my initial reason for joining AmeriCorps: to not only gain experience but also to discover if I'd like working in wildlife enforcement or state park management. And now I definitely think I would."

Jost, the mortgage-broker-turned-park-ranger, credits AmeriCorps for helping him find his calling. "I'd never have advanced this quickly without it," he says. "AmeriCorps got me to Montana and helped me develop skills I never would have had."

Casey Fuson, of Illinois, says her very identity was crystalized while working for Montana State Parks through AmeriCorps. A prized memento of her time working at Lone Pine State Park is a portrait of her in a tan Montana State Parks shirt drawn by a Kalispell third-grader. The girl had trailed Fuson during a spring field trip. When the AmeriCorps service worker received the drawing in the mail a few weeks later, it was clear the girl had paid attention. The drawing included several animals that Fuson had mentioned in her lecture, and even the necklace she had worn. "If I'd asked someone to draw a picture of me, this is exactly what I'd want them to draw," she says. "When I first looked at it, I had an epiphany of 'I am the person I want to be because of AmeriCorps.'" 🐾



Montana State Parks AmeriCorps Achievements

In 2018, 18 AmeriCorps service members worked at 16 Montana state parks as well as two regional headquarters offices and the Helena headquarters.

Their accomplishments:

- ▶ improved 264 acres of state parks land;
- ▶ offered 577 education and interpretive programs that attracted 9,268 youth and 5,120 adult participants;
- ▶ improved or developed (with curriculum, interpretive panels, brochures, etc.) 168 educational or interpretive products;
- ▶ engaged 369 volunteers (250 of whom had not previously volunteered at a state park);
- ▶ took part in 455 community outreach activities; and
- ▶ engaged in 42 new community partnerships.



Sara Parks
educates
students on
bull snakes



BETTER FISHING TOMORROW

FWP's Future Fisheries Improvement Program improves angling across Montana by restoring and enhancing the places where fish live and reproduce. **By Allen Morris Jones**



CENTRAL MONTANA OASIS Anglers fish for rainbow and brown trout on Big Spring Creek outside Lewistown. Restoration of the Brewery Flats stretch of the stream was one of the first major habitat projects funded by FWP's Future Fisheries Improvement Program.

PHOTO BY JOHN WARNER

What makes for a fishable trout stream?

For starters, clean, cold water, and enough of it. Add to that a few meanders, or bends, a gradient so that water picks up speed here and there, pockets of deep water to hide fish from predators, some gravel where trout spawn and underwater insects live. And enough public access so that anglers can actually fish it.

You wouldn't necessarily think to put stream advocates on that list. But these days, every watershed needs a champion. Often it needs a team of champions, with different personalities and dissimilar interests coming together on behalf of the fish, the water, and the health of the surrounding watershed.

For 20-plus years, the Future Fisheries Improvement Program, administered by Montana Fish, Wildlife & Parks, has been a workhorse of fish habitat conservation. On hundreds of projects across the state, fisheries biologists and partners—ranging from ranching families and local conservation clubs to federal and state agencies—have been using the program to protect and improve Montana's fishable waters.

Say a landowner needs an aerator to prevent winterkill in a fishing pond. Or a Trout Unlimited chapter wants to prevent an eroding riverbank from washing away, or a conservation group wants to work with a landowner to fence cattle from a stream. Or the U.S. Forest Service wants to install a

culvert under a road so that bull trout can move upstream to spawn.

One of the first options for people who want to make these and other public habitat improvements is to apply for a Future Fisheries grant.

Ever wondered what FWP does with your fishing license dollars? An important share of that money goes toward making better homes for fish and improving angling opportunities across Montana.

HALF-HIDDEN BLUR

Dry Creek isn't a stream that's ever mentioned in Montana fishing guides. Flowing into the East Gallatin River just outside Belgrade, it's little more than a half-hidden

blur as you drive past on your way to Costco, one of those generic Montana channels that's overused and underappreciated.

Yet the stream holds some nice trout—and could produce even more.

A few years ago, Steve Carlson heard about Future Fisheries. He was representing a group of fellow landowners who wanted to improve trout habitat in their particular stretch of Dry Creek north of town in a way that benefited the larger river system. "I feel that it's incumbent on us as landowners to be good stewards," Carlson says. He thought a public grant might help further the group's goal.

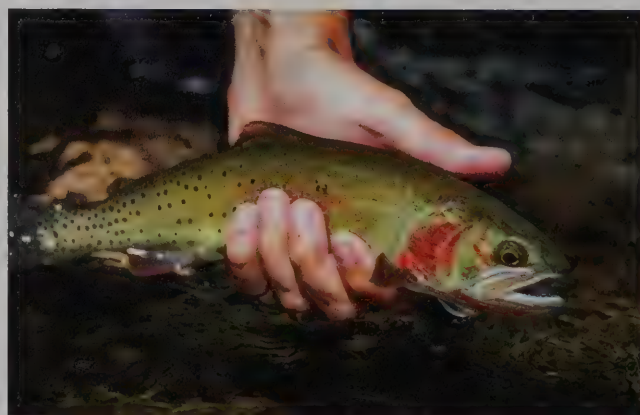
Pat Byorth, director of Montana Trout Unlimited's Water Project, came on board as project manager. For Carlson and Trout Unlimited to receive Future Fisheries money for the project, it needed to demonstrate an obvious public fisheries benefit. They looked at a diversion ditch on the stream south of Dry Creek Road that blocked fish swimming up from the East Gallatin from reaching gravelly spawning habitat. Could part of the project include helping fish move past the diversion, thus reconnecting Dry Creek to the East Gallatin? If so, that would benefit the trout fisheries in the creek as well as the larger East Gallatin, and even the famous Gallatin River itself. "With river systems, whenever you benefit the small stuff, you help the big stuff," says Michelle McGree, coordinator of the Future Fisheries Program.

Byorth and Trout Unlimited put Carlson in touch with multiple partners, including American Rivers and the Greater Gallatin Watershed Council. Trout Unlimited took the lead on applying for a Future Fisheries grant. That \$50,000 grant was paired with a financial commitment from local landowners. The first phase

will involve planting willows and other shrubs along sloughing stream banks. The eroding soil makes the stream shallower and warmer, and silt covers gravel where trout spawn and aquatic insects live. In addition to stabilizing the bank, the vegetation will provide shade to keep the stream cool in summer. Crews will also narrow some stretches to increase stream velocity, allowing the faster water to scour holes where trout can hide from predators and to rinse silt from spawning gravel.



“With river systems, whenever you benefit the small stuff, you help the big stuff.”



ADDING COLD WATER

On a warm day last May, Byorth and McGree walk through Lonny Walker's property south of Dry Creek Road, downstream from the habitat improvement project. Walker, one of a dozen landowners who irrigate from a diversion on his property, describes how a

bypass structure will allow fish to move upstream. This work is being funded in part by a second Future Fisheries grant. Walker gestures toward survey stakes, their ribbons flapping in the wind. Work has been temporarily delayed by heavy rains, frustrating everyone. Because so many different entities were involved—ranchers, trout anglers, state officials—it has already taken a year to get this second phase of the project going.

Byorth, McGree, and Walker stop to look at the water in Dry Creek flowing past. "This

project is about different Montana characters working together," says Byorth. "We all have this fundamental desire to do something good for the watershed. And that's what binds us."

Why Dry Creek? "If you can reconnect a stream that flows in summer at 6 cfs [cubic feet per second] to a river that gets down to 20 cfs in August, then you're adding a lot of cold water to the East Gallatin and providing a coldwater refuge for its fish," Byorth says. "Rainbows and browns, and also native long-nose suckers, white suckers, and mountain whitefish—they all rely on a connected system. That's why Dry Creek."

McGree walks to one side, considering the water. She was trained as a field biologist, so all this is familiar to her—eyeing the course of the stream, estimating flows, considering how a deepening here or a bend there would create better trout habitat. "This project used two separate Future Fisheries grants to produce a range of improvements on Dry Creek. Together, they are enhancing the entire system," she says.

THE NATURAL HATCHERIES

For decades, FWP raised trout in hatcheries and stocked them in streams and rivers. But after studies showed that stocking fish depressed rather than enhanced natural populations, the department discontinued

Allen Morris Jones is a writer, editor, and publisher in Livingston.



DRY CREEK Above: Dry Creek property owner Steve Carlson walks along eroding banks. Left: Trout Unlimited's Pat Byorth (left) and Lonny Walker, a landowner who irrigates using water from Dry Creek. Right: The diversion dam where a fish bypass structure is being built so trout can reach spawning habitat. Far left: Michelle McGree, coordinator of FWP's Future Fisheries Improvement Program; a westslope cutthroat trout.



the practice. (Stocking trout, walleye, and other species still works in reservoirs, lakes, and ponds.) Instead, fisheries managers realized they could protect and improve habitat so that the streams and rivers themselves produced more wild fish—in other words, help nature be its own “hatchery.”

Habitat studies and improvements began in the 1960s, and by the 1980s dozens of projects were completed or under way across Montana. When there wasn't enough money to meet the growing need, the Montana Legislature responded with the 1989 River Restoration Act. The legislation earmarked a small amount from each fishing

license for stream habitat restoration in western Montana. The legislature has since revised and expanded the popular program, now called Future Fisheries Improvement. New legislation also allows funds to be used for all native species, which provides more warmwater angling opportunities in eastern Montana. Though any habitat project that benefits wild fish is eligible for funding, Future Fisheries puts high priority on native species like bull trout, cutthroat trout, channel catfish, sauger, and shovelnose sturgeon.

The work of enhancing fish habitat is part biology, part civil engineering, part heavy-duty construction. Think dump

trucks, backhoes, cement mixers, and even helicopters. Crews dig out new stream channels, install tons of boulders and dirt, build concrete fish barriers, fly in thousands of discarded Christmas trees as reservoir habitat, pound in miles of stream-side fencing, and plant forests of willows along river banks.

Just as it takes heavy machinery to damage fish habitat, it requires much of the same equipment to restore it. It can be difficult for an angler peacefully wading a stream or river to imagine that, just a few years earlier, the same area might have echoed with the din of diesel engines.



What Future Fisheries Pays For

The Montana Legislature created the Future Fisheries Improvement Program to produce more and better fishing opportunities by protecting and improving fish habitat.

That work includes:

Installing fencing along streams to keep cattle from trampling banks and damaging vegetation, while creating nearby watering sources for livestock.

Leasing water rights to maintain in-stream flows.

Planting willows and other vegetation along streams to stabilize eroding banks and create shade that cools the water in midsummer.

Installing screens on irrigation diversions to prevent small fish from swimming into ditches and becoming stranded.

Removing barriers, or installing fish ladders or bypass channels around barriers, to help fish move upstream.

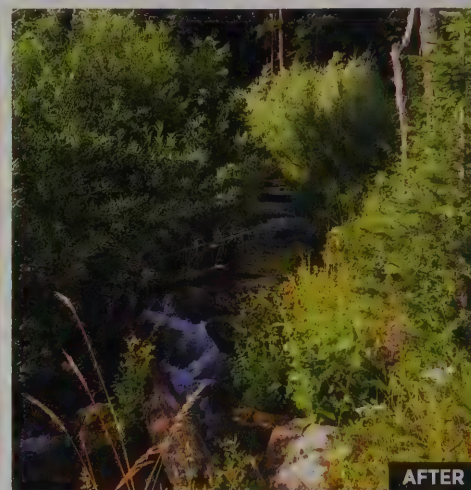
Building barriers to prevent non-native trout from competing or hybridizing with genetically pure native cutthroat.

Reconstructing stream channels modified from their natural form by roads and other development.

Installing habitat structures in lakes and reservoirs to create fish cover or spawning areas.

Future Fisheries in Action

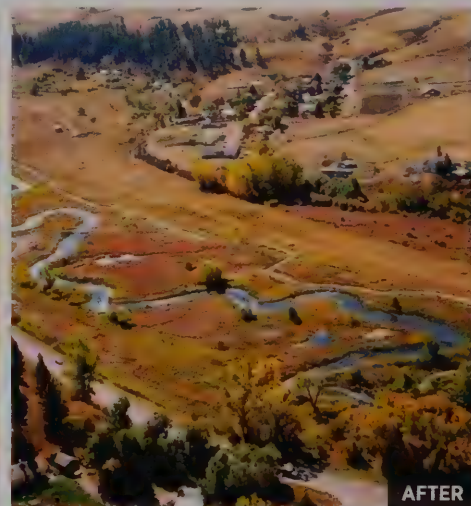
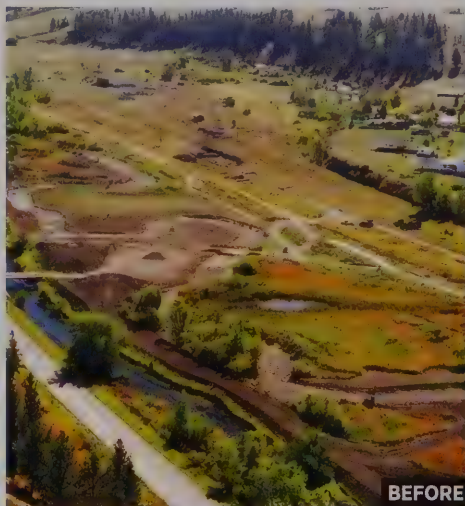
Shown here are a handful of the more than 600 fisheries habitat improvement projects that FWP's Future Fisheries Improvement Program has helped fund over the past 20-plus years.



Mattie V Creek, which supports native westslope cutthroat trout, is a tributary of Ninemile Creek northwest of **Missoula** that was degraded decades ago by placer mining. Beginning in 2010, crews removed mine waste, constructed a new channel, and revegetated the stream banks and floodplain.



A "perched" culvert on **Cottonwood Creek** near **Seeley Lake** blocked westslope cutthroat and bull trout. Upstream passage was restored by removing the culvert and replacing the road crossing with a free-span bridge.



Before restoration, the Brewery Flats stretch of **Big Spring Creek** north of **Lewistown** was a 2,600-foot ditch that ran next to Montana Highway 238. "You couldn't even fish from the bank without your backcast hooking a big pickup driving by," a regional FWP fisheries manager told *Montana Outdoors* in a 2002 article. Crews excavated the old channel, lined it with gravel, revegetated the banks, and diverted water into the restored reach.



BEFORE



AFTER

A diversion dam on the **Musselshell River** about 25 miles east of **Harlowton** was renovated to fix the failing structure and reduce water loss. The Future Fisheries Program helped pay to build a rock ramp that allows migrating fish to swim around the dam to reach spawning areas upstream.



BEFORE



AFTER

The **South Fork Judith River** in the **Little Belt Mountains** is home to genetically pure westslope cutthroat trout. To prevent non-native rainbow trout from hybridizing with the native fish in the upper 25 miles of the drainage, crews installed a large fish-passage barrier.

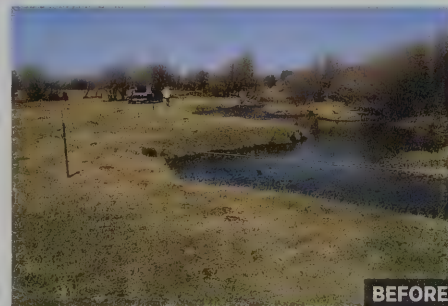


BEFORE



AFTER

Rattlesnake Creek is a spawning tributary for bull, westslope cutthroat, rainbow, and brown trout on the Clark Fork River near **Missoula**. For decades the Williams ditch diverted water and fish from the creek to an irrigation system. A new fish screen separates the water from the fish so trout can stay in the creek while irrigators use their water.



BEFORE

For years, cattle had overgrazed the banks of the **North Fork Smith River** near **White Sulphur Springs**. That removed vegetation that once shaded the water, and it caused banks to collapse. New fencing keeps the livestock away from the banks, which are now lush with vegetation. An off-stream station provides the cattle with drinking water.



AFTER

AT A GLANCE:

FWP's FUTURE FISHERIES IMPROVEMENT PROGRAM

Matching dollars for approved projects
\$56.5 Million

\$68.5 Million
Total dollars spent on habitat restoration

610 Projects completed

23 Years the program has been in effect

\$17.9 Million
Dollars approved by the Fish & Wildlife Commission

60 Projects pending or ongoing

234
Miles of riparian fence installed

129
Miles of restored river channel

48 Fish screens placed on irrigation diversions

192
Structures installed or removed for fish passage

13,200
Lake/reservoir spawning enhancement structures

38 Game fish species benefiting from restored habitats

234
Cubic feet per second added to instream flow

Over the past two decades, Future Fisheries has granted nearly \$18 million to more than 600 habitat improvement projects across Montana. Funding for the state program comes from Montana resident and nonresident fishing license fees and the Resource Indemnity Trust Fund (taxes collected on gas, coal, and other energy development). Remaining funds come from watershed groups, Trout Unlimited, private landowners, companies required to mitigate hydroelectric projects, federal agencies such as the Environmental Protection Agency and the U.S. Fish & Wildlife Service, and other sources.

While occasionally the sole source of funding for habitat improvement projects, Future Fisheries is usually paired with other state or federal grants or private funding sources.

To qualify for Future Fisheries funding, an application goes through an extensive review process by FWP and a 14-person citizen panel appointed by the governor that includes high school students, mining professionals, stream restoration experts, agricultural interests, and others. "It's an impressive cross section of Montanans," says McGree, FWP staff liaison for the panel. Final approval for each proposal comes from the Montana Fish and Wildlife Commission.

McGree reviews project applications, coordinates with contractors and consultants, approves payments, and ensures projects comply with state statutes. She also regularly visits sites of proposed and completed projects. One place she has toured several times is Stonewall Creek, a key tributary of the Blackfoot River north of Lincoln.

MESSED UP BY MINING

The Stonewall Creek restoration is typical of the projects that Future Fisheries has created to fund. Containing native westslope

cutthroat trout, the stream flows through a mix of national forest, state property, and private land. Over the past century, gold mining operations extensively damaged its upper reaches. A three-quarter-mile stretch of tailings piles—some 30 feet high—rerouted the main channel away from the historical floodplain and blocked spawning tributaries. As a result, the cutthroat population in that stretch was nearly half that of less-disrupted reaches downstream.



“Native trout require clear water, cold water, connected water, and complex water.”

The Big Blackfoot Chapter of Trout Unlimited took the lead on applying for a Future Fisheries grant. The chapter wanted to remove the miniature mountains of crushed rock, restore the floodplain, increase stream connectivity and function, and revegetate the banks.

"We're interested in restoring the 'Four Cs,'" says Ryen Neudecker, a fisheries biologist for the chapter. "Native trout require clear water, cold water, connected water—we've documented cutthroat trout moving almost 100 miles in this watershed to spawn—and complex water. Fish love [under-

water] wood, undercut banks, and pools."

Trout Unlimited started the project, which was finished in 2016, but other parties, such as local irrigators and the U.S. Forest Service, were equally invested.

Driving up a rough gravel road toward Stonewall Creek recently, George Liknes, a USFS fisheries biologist based in Lincoln, pulls up next to a pile of boulders and a mound of gravel. "All these boulders came from the placer mining piles," he says. "They'll be used as de-limiters—barriers like those used in campgrounds or for road closures. The gravel will be crushed and used on the roads leading to and from the project."

At the lower end of the project area, he and Neudecker walk along a flat part of the floodplain in the tight valley, noisy with the rushing stream. After tailings piles were removed, the area was planted with native seeds, seedlings, and saplings. Everything is just starting to bloom.

Neudecker and Liknes have collaborated on several trout habitat improvement projects over the years, and there is an easy familiarity between them. "Every year, the Big Blackfoot Chapter of Trout Unlimited has

three or four projects funded through the Future Fisheries Program," Neudecker says. Federal funding sources often require a "non-federal match" of money. Funding from Future Fisheries fills that role. According to Neudecker, "That state match is critical for leveraging funds from the U.S. Fish & Wildlife Service or the U.S. Forest Service."

We step over some old downed trees that crews had trucked to the site and scattered over the newly recovered floodplain. "They create what we call microsites," Neudecker says. "They trap moisture and spring heat to



FISH ON While Future Fisheries focuses funding on habitat projects, the ultimate goal in many cases is to improve angling opportunities for (clockwise from top) trout and warmwater species such as sunfish and channel catfish. Far left: Forest Service biologist George Liknes and Trout Unlimited biologist Ryan Neudecker survey the restoration of Stonewall Creek, a tributary north of Lincoln containing west-slope cutthroat.



encourage seeds to take off on their own. And then we've put in swales to collect groundwater so that when the area floods in spring, young fish have places where they can survive."

Liknes says crews have installed 27 log structures in the stream itself, turning it from a one-mile-long riffle into a series of riffles, runs, and pools that provide more habitat diversity. But most of the work on the Stonewall Creek project was done in the floodplain. "One of the benefits of having a

restored floodplain is that it stores water and then, in late summer, the water seeps back into the stream," says Neudecker. "That helps long term with in-stream flows and other things trout care about."

"And irrigators," Liknes adds.

Neudecker bends over some new growth. "These are all native forbs—wild strawberries, yarrow, spirea. It's kind of cool when you uncover the floodplain. The native seed bank is still there."

Heading back to the vehicle, Neudecker

reiterates how the Big Blackfoot Chapter relies on Future Fisheries to help improve the area's trout habitat and trout angling. "One thing that's so great about the program is that it doesn't have a lot of bureaucracy or burdensome grant-reporting requirements," she says. "There's enough so that public funds are used responsibly. But at the same time, you can actually get things done in the field, like what we've seen here. To me, it's the perfect balance of what a grant program should look like." 🐾



Get Out in It

It seemed like the winter of 2017-18 would never end. Billings had its snowiest winter in recorded history. East Glacier received 78 inches of snow in February alone. The Weather Channel ranked Havre's winter as the "worst in the United States."

Now here we are, facing more months of cold, snow, and ice. What's a Montanan to do to survive the frigid season ahead, other than migrate south with the waterfowl and

warblers and return in June?

Bundling up helps. Winter is no time for vanity. Pile on the layers. Guys, consider wearing mittens, as well as hats that cover your ears. Women figured that out ages ago and are warmer for it.

We believe that the best way to deal with winter is to meet it head on and get out in it. Skate. Hike. Snowshoe. Ski. Watch birds. Hunt. Trap. Ice fish. Catch snow-

flakes on your tongue. Just don't let winter keep you indoors. If that happens, winter wins—plus you'll miss out on some of Montana's most beautiful scenery and exhilarating adventures.

We can't let that happen. 

CROSS-COUNTRY SKIING

Right: Cross-country skiers on the Rendezvous trails in West Yellowstone. Chuck Haney photo

PHOTO ESSAY

ICE SKATE

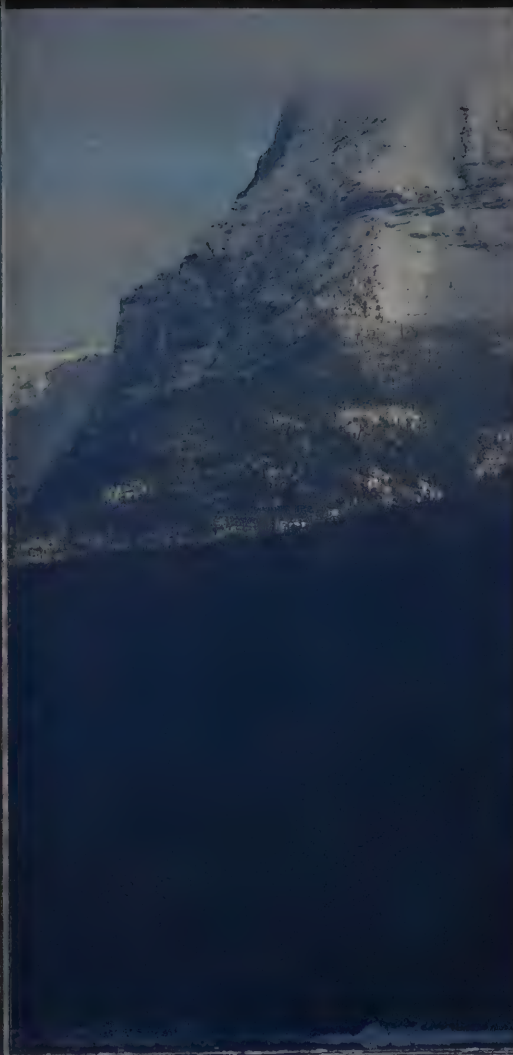
Far left: A lone skater on Lake McDonald, Glacier National Park. Tom Burke photo

HUNT

Left: Grouse hunting in the Snowcrest Mountains. Jack Ballard photo

ICE FISH

Below: Custom ice fishing rod. Jeremie Hollman photo



ICE FISHING

Above: Happy angler with a perch. Jeremie Hollman photo

SNOWSHOEING

Left: Snowshoes on ice. Dawn Wilson photo





Clockwise from top left:

DOWNHILL SKIING

Skiing through powder in Whitefish. Chuck Haney photo.

SNOW KITING

Snow kiting on a frozen field. Elizabeth Moore photo.

SNOWMOBILING

Exploring the Two Top Snowmobile Trail near West Yellowstone. Ken Takata photo.

HIKING

Right: Hiking limestone slot canyons in the Big Belt Mountains. Kevin League photo.



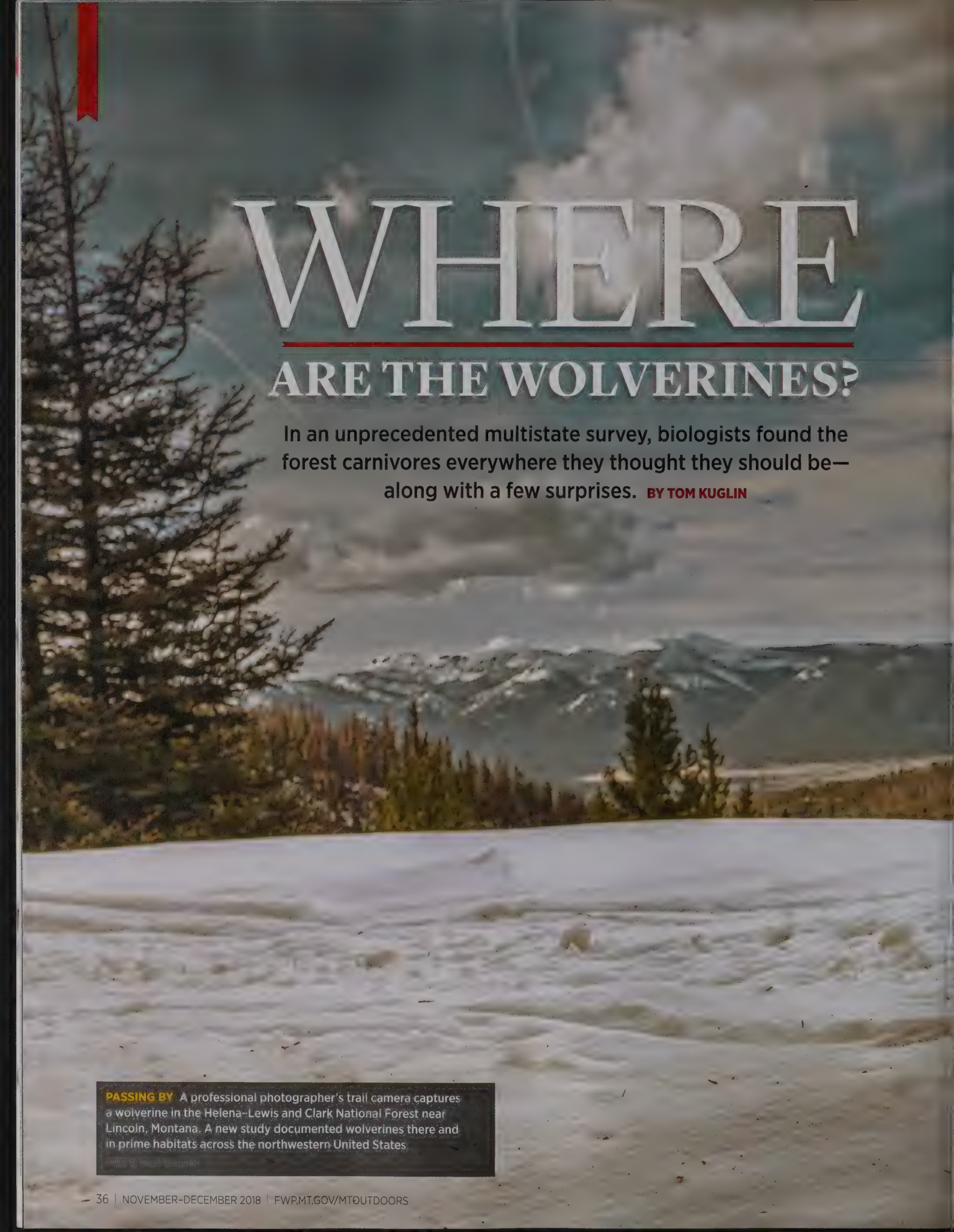
ICE CLIMBING

Above: Ice climbing Cataract Falls, west of Augusta.
John Lambing photo.

BIRD WATCHING

Left: Observing migrating snow geese at Freezout Lake Wildlife Management Area.
Elizabeth Moore photo.





WHERE ARE THE WOLVERINES?

In an unprecedented multistate survey, biologists found the forest carnivores everywhere they thought they should be—along with a few surprises. **BY TOM KUGLIN**

PASSING BY A professional photographer's trail camera captures a wolverine in the Helena-Lewis and Clark National Forest near Lincoln, Montana. A new study documented wolverines there and in prime habitats across the northwestern United States.

PHOTO BY WALTER BOGGS/AN





To most people, it's a wonder that biologists found *any* wolverines.

Only the size of a border collie, the elusive carnivores have home ranges of up to 500 square miles and live in the most remote reaches of North America. Few people, even backcountry outfitters, have ever seen one in the wild. So when scientists set out two years ago to find where wolverines occur in Montana, Idaho, Wyoming, and Washington, the task was daunting.

To do it, they used old-school wildlife monitoring gear, like scent lures and snowshoes, as well as snowmobiles and the latest computer-aided scientific analysis.

The four states, along with federal, tribal, and university partners, recently finished their first report on what's called the Western States Wolverine Conservation Project. The document details the unprecedented multi-state survey of this largest land-dwelling member of the weasel family. "This whole effort started with putting people who know wolverines in a room and asking the question, 'What can we do to make sure this species is here decades from now?'" says Bob Inman, Montana Fish, Wildlife & Parks Carnivore-Furbearer Program coordinator.

Researchers traditionally study wolverines anecdotally or with small-scale projects in known hotbeds in a few mountain ranges and national parks. The new survey looked for the mountain carnivores in an area of nearly 55,000 square miles. Researchers and wildlife managers now have baseline information to determine whether distribution of this iconic high-country species grows or shrinks in the future. The new data will also help them identify and conserve core breeding populations

and decide where to protect connections between critical habitats.

LIVING ON THE EDGE

For thousands of years, wolverines have lived at naturally low densities in some of the most inaccessible terrain in the Northern Rockies and Cascades, Canada, and Alaska. Biologists estimate that, historically, several hundred lived in today's lower 48 states. By 1900, poisoning by federal agencies and unregulated commercial trapping eliminated the species south of the Canadian border. Then, in the 1930s, wolverines started to recolonize their former territory.

Wolverines have a well-deserved reputation for ferocity and tenacity. Though weighing less than 40 pounds, *Gulo gulo* (from the Latin word for "glutton," referring to their seemingly insatiable appetites) have been known to chase a grizzly bear off a kill and, in deep snow, use their snowshoe-like paws and crushing jaws to take down elk. "They're always living on the edge—that's the constant for them," says Diane Evans Mack, a biologist with Idaho Fish and Game and a member of the wolverine conservation team. "They have huge territories, and they're still active in the winter when a lot of prey is either hibernating or gone."

Inman recalls the day when he realized just how strong and smart wolverines can be. He and colleagues were tracking a radio-collared female in the Spanish Peaks southwest of Bozeman to see if she had produced a litter. As they hiked across snowpack on a 9,000-foot mountain, the biologists came across an elk calf the wolverine had killed and left. While they examined the carcass, the radio receiver began beeping louder and louder. The wolverine was returning.

Inman and the others hid, then watched the 20-pound female try to drag the 30-pound carcass uphill. Every time she stopped to rest, the calf slid back down the hill. After repeated attempts, the wolverine decided instead to drag the elk down and across a boulder field and tuck it deep into a hole under a rock, before going on her way. "It all clicked for me about how this animal makes a living," Inman says. "Here we are in mid-June, and she basically took that carcass and stuck it in a 'refrigerator' that nothing bigger than a wolverine could get to later when there's not a lot of food around."

WOLVERINES ARE WHERE?

Scientists have long known that wolverines are one of North America's hardiest creatures. But they didn't know exactly where the animals lived, or how habitat fragmentation and declining snowpack from climate change affect the species. Unlike elk and other game species that generate hunting license dollars used for monitoring and management, wolverines create no income for

“

Whether they're listed as threatened or not, we needed more information to make good management decisions.

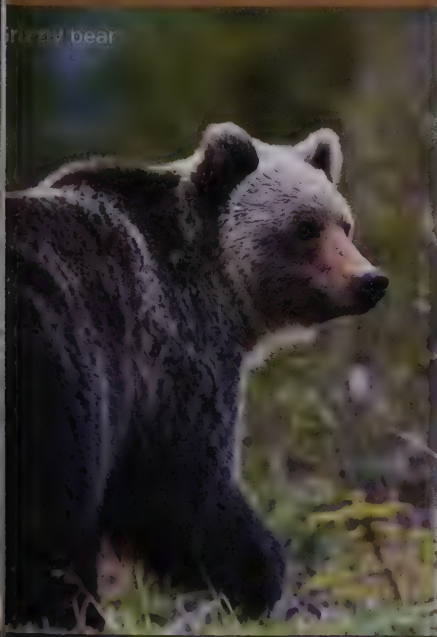
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research. The resulting lack of information, especially regarding the possible effects of reduced snowpack, led the U.S. Fish & Wildlife Service in 2013 to consider listing wolverines under the Endangered Species Act.

Though the agency eventually concluded that listing was "not warranted," the four states decided to marshal forces and come up with a collective strategy to conserve wolverine populations in much the same way as if the species had been federally protected. "The states have wanted to do more for wolverines for years," says Inman, who previously directed wolverine conservation for the Wildlife Conservation Society. "Whether they're listed as federally threat-

Tom Kuglin is the natural resources reporter for the Independent Record in Helena.

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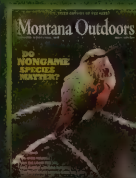
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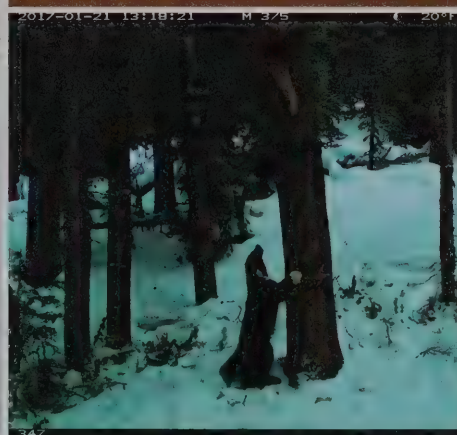
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PHOTO OPS Clockwise from left: Idaho crew members Peter Ott and Luke Ferguson hang a deer haunch at a remote bait station; in Montana, wildlife technician Wendy Cole checks a trail camera. In midwinter, three of the 22,641 wolverine images captured by the cameras at 183 stations in four states.



ened or not, we needed more information to make good management decisions. That was the impetus for taking on a really difficult project like this one.”

In 2015, wolverine experts met to figure out what the state, tribal, and university partners could accomplish by working together. “Every state has its own interest in management and recovery, and those don’t always align,” says Robert Long, conservation scientist with Woodland Park Zoo in Seattle. Long, part of the zoo’s research team, works with the U.S. Forest Service to monitor wolverines in the northern Cascades and partnered with the Washington Department of Fish & Wildlife on the multistate survey. “But this is a rare, recovering species that’s impossible to study in isolation,” he says. “No one group or isolated mountain range study can give us a picture of what’s going on. This was an opportunity to study a species over the extent of its range with scientific rigor that wouldn’t have been possible if we hadn’t collaborated.”

The first step was to conduct a baseline survey against which future monitoring could be compared. The aim wasn’t to determine an exact population number—that would be astronomically expensive over such a vast landscape—but rather to measure whether wolverine distribution is shrinking, expanding, or holding steady. “First we map where wolverines occur, then we monitor those sites over time to see if the range is changing, and then we figure out why those changes are occurring,” Inman says.

The survey would encompass thousands of square miles of rugged and remote habitat that wolverines historically occupied. “The word that comes to mind is ‘ambitious,’” says Bob Lanka, a recently retired senior wildlife official with the Wyoming Game and Fish Department who was instrumental in starting the project. “There’s definitely a reason it was never tried before.”

SNOWSHOES AND STATISTICS

Researchers started by identifying the best wolverine habitat in the four states that either held or could hold wolverines. (In recent years, wolverines have also shown up in California and Colorado, but those states don’t have breeding populations and weren’t included in the survey.) Then biologists divided that vast mountainous landscape into

633 cells, each measuring 87 square miles. Using traditional bait stations aimed at capturing wolverine hair, scientists randomly sampled 183 of the cells to see which ones held wolverines.

The states partnered with the U.S. Forest Service; U.S. Fish & Wildlife Service; National Park Service; the Northern Arapaho, Eastern Shoshone, and Confederated Salish and Kootenai Tribes; University of Montana; and Montana State University. The partners raised nearly \$1 million for the labor-intensive work.

Survey crews hiked, skied, snowshoed, and snowmobiled deep into mountain ranges in the 183 grid cells and placed bait or scent stations with cameras along with genetics-gathering hair traps. They hung deer, beaver, or other meat on trees into which wire brushes were inserted to catch the hair of wolverines climbing to the bait. Trail cams installed nearby captured images of animals that investigated the sites. The cameras and brushes were checked once

a month over four months at stations that could be accessed; stations in extremely remote sites were not visited until the following spring. Snagged hairs were sent to the U.S. Forest Service's National Genomics Center for Wildlife and Fish Conservation in Missoula for analysis to determine if they came from a wolverine or another carnivore such as a marten or fisher.

Setting up the stations was difficult enough in the backcountry. Even harder was returning in midwinter to check brushes and cameras, which often required traveling through deep snow in below-zero temperatures. To ensure scientific accuracy of the findings, scientists established strict field protocols, including everything from the placement of cameras within each cell to the size of the brushes used to snag wolverine hair. "The point was to make sure the data from each cell was collected in the exact same way, so that analysis of all the information was as accurate and repeatable as pos-

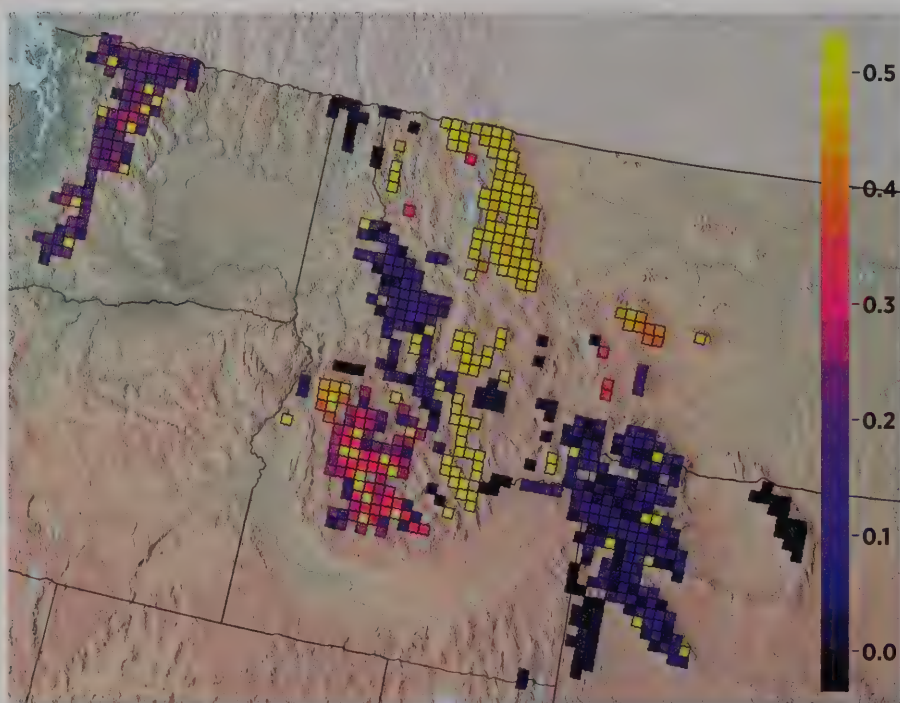
"I've never seen such extensive collaborations among agencies and NGOs in my entire career."

sible," says Evans Mack, the Idaho biologist.

The survey detected wolverines in 59 of the 183 cells that were sampled. But just because a camera or brush didn't detect a wolverine didn't mean the animals weren't living in that cell. To account for what's known as "imperfect detectability," the study hired Paul Lukacs of the Quantitative Wildlife Ecology Lab at the University of Montana. Lukacs analyzed forest cover and other characteristics of cells with high and low levels of detection (ranging from one detection per month over four months to only one detection over four months). That allowed him to estimate the probability that cells where wolverines weren't identified did contain the animals. He estimated that if a wolverine lived in a sampled cell, there was a 92 percent chance of detecting it there at least once over the entire four-month survey. "That's a really high detection probability for a rare animal," Lukacs says. "It shows that the biologists knew how to attract wolverines to the bait stations." After accounting for imperfect detectability, the team adjusted the estimate of occupancy at cells where wolverines were not detected and concluded that wolverines were likely present in roughly half the 633 cells.

EXCITING DISCOVERIES

Though occupancy varied across the study area, with lower rates at the southern periphery, wolverines were found across much of their historic range. "This confirms the broad distribution of wolverines across the region, and that recolonization has progressed substantially since historical lows," Lanka says. Unsurprisingly, known wolverine hotbeds such as the Bob Marshall Wilderness and central Idaho's Sawtooth Mountains produced plenty of detections. But so did many other areas previously considered unoccupied, such as the first detection in



Where the wolverines (most likely) are

Researchers didn't look for wolverines in all of the 633 cells they identified as possible habitat. That would have been astronomically expensive in these remote mountains. But they sampled 183 cells and found wolverines in 59. After analyzing the findings, and accounting for "imperfect detectability," scientists concluded that wolverines were likely present in roughly half of the 633 cells. The colors on this map represent the probability that wolverines live in an individual cell, ranging from yellow for high probability (1.0) to dark purple and black for low probability (0.0)

Scent dispensers save time and money

Designed by wildlife biologists and Microsoft engineers, the battery-powered dispensers are housed in metal casings. Each day throughout the winter, the devices dispensed a few drops of wolverine lure onto a cow femur.

A cow femur, attached to the tree, held the scent dripped from above.

Four brass gun-cleaning brushes attached to the tree snared the hair of any wolverine that climbed to investigate the scent. The hair was sent to a lab for DNA analysis.

An infrared trail camera was mounted to a tree 12-18 feet away and focused between the ground and the bone.

Most of the 183 lure stations in the study used meat and a sponge soaked in scent lure to attract wolverines. The stations needed to be checked and restocked with new meat and lure once per month throughout the winter.

But some stations were so remote they couldn't be regularly resupplied. The solution? Automatic scent dispensers.

Robert Long of Woodland Park Zoo in Seattle and Joel Sauder of Idaho Fish and Game had previously worked with engineers at Microsoft to create an ultra-low-power processor that controlled a pump and a scent reservoir that would regularly release small amounts of wolverine lure in the dead of winter. The dispensers, installed at 30 remote lure stations, ran on lithium batteries and were designed to operate in temperatures down to -40 degrees F.

After being set up in October, each device dispensed a few drops of wolverine lure daily onto a cow femur attached below. The bone held the scent and gave the wolverine something to chew on. Crews returned to the sites in late winter or spring, as soon as snow conditions allowed, to retrieve hair samples and trail camera files.

The automatic scent-disperser stations were just as effective at attracting wolverines as the meat-and-sponge stations. "Agencies could cut future

survey costs substantially if we used the dispensers at all of the sites," says Justin Gude, head of wildlife research for Montana FWP.

Woodland Park Zoo is currently developing an updated dispenser and intends to produce the devices for researchers. ■

years in central Montana's Little Belt Mountains between Helena and Lewistown.

One of the most exciting discoveries was in Wyoming, the southern reach of known wolverine populations in the Northern Rockies. The mountains surrounding Yellowstone National Park have long been known as core habitat. But the survey detected wolverines for the first time in the Gros Ventre Mountains and the southern reaches of the Wind River Range, up to 100 miles south of the park. In the southern Wind River Range, they also identified a male and a female at the same camera station, suggesting that wolverines could be breeding in the area. "It was pretty exciting to find them that far

south," says Zack Walker, Nongame Wildlife Program supervisor for the Wyoming Game and Fish Department.

In Washington, the survey verified two wolverines south of I-90, a region where recolonizing wolverines have only recently been documented. "We've got a good amount of public land, and wolverines are starting to show up in places where they haven't been, and that's all positive," Long says. "Knowing that the species is here and recovering gives us additional incentive to learn more about what factors affect where wolverines can and can't occur."

Key to the massive survey effort has been nearly unprecedented cooperation and col-

laboration among the four states, says Lanka, the retired Wyoming wildlife official. "We tend to work within our own state boundaries, but in this case we had experts from across the region come together and create a remarkably effective team that was able to pull off a nearly impossible task," he says. "I've never seen such extensive collaboration among agencies and NGOs [nongovernmental organizations] in my entire career."

Justin Gude, head of wildlife research for FWP, says that collaboration and commitment has led the four states to agree to repeat the survey every five years to see if wolverine distribution grows or shrinks. "That will help us see the effects on distribu-



ERIC ROCK

FEW AND FAR BETWEEN Forest carnivores with home ranges of up to 500 square miles, wolverines have always lived in low densities. Biologists estimate that, historically, only several hundred occupied today's lower 48 states, mostly in the high-mountain habitats where scientists found them in a recent survey.

tion from things like climate change, human development, and translocations," he says.

In the meantime, biologists want to identify key connectivity corridors between core habitats and figure out how to protect them. They hope to combine information from a Montana State University study on wolverine habitat use in the Greater Yellowstone Ecosystem with research from Glacier National Park, central Idaho, and the northern Cascades. "That would give us comprehensive data on which to model connectivity

among the core alpine habitat patches that wolverines use," says Gude.

Wolverine habitat in designated wilderness areas is protected from roads and oil, gas, and other development that could hamper the animals' movement. Key habitat on private land is another matter. The project's partners want to safeguard corridors so the animals can move through private property, using conservation easements with landowner partners. Connectivity is essential to link populations and

allow wolverines to move the vast distances necessary for finding mates, essential for the species' long-term survival.

Team members have also begun talking to wolverine experts in other Western states about translocating wolverines to new areas of suitable habitat (see sidebar, below). "From the very beginning of this project, our mantra has been 'connect, restore, and monitor,'" says Inman. "We've made a great start on monitoring, and now we're moving into the connection and restoration work." 🐾

Other western states could be potential wolverine recipients

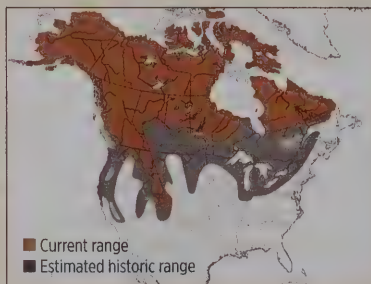
While the Western States Wolverine Conservation Project survey found solid wolverine distribution across Wyoming, Montana, Idaho, and Washington, scientists wonder what a wider survey would have uncovered. "Wolverines are well distributed throughout the range we surveyed, so there are very few places left in the four states for translocation," says Justin Gude, head of wildlife research for Montana Fish, Wildlife & Parks. "If we could have extended the survey into likely habitat in Oregon, California, Utah, and Colorado, I think we would have found places with much less use by wolverines where they could be reintroduced."

Those states have already shown interest in the next wolverine survey. Colorado and California, both with mountain ranges reaching 14,000 feet, may even consider accepting wolverines from other states or Canada. During the last decade in both Colorado and California, young males traveled from neighboring states to become the first documented

wolverines in a century, sparking interest among the public.

After successfully reestablishing the Canada lynx to its historic range, Colorado is considering doing the same for wolverines. But Colorado Parks and Wildlife officials say that some ski resorts, other businesses, and landowners are concerned about what might happen if the species were listed under the Endangered Species Act (ESA) after reintroduction into Colorado. Western states have begun working with the U.S. Fish & Wildlife Service to find ways to reintroduce wolverines to new areas while addressing the concern.

"We hope we are able to get past the concerns of ESA listing and move to active conservation," says Eric Odell, Terrestrial Species Conservation Program manager for Colorado Parks and Wildlife. "If wolverines could reoccupy suitable habitat in Colorado and California, we could increase the population by 50 percent across the Lower 48."



WIKIPEDIA

JANUARY-FEBRUARY 2018 37th Annual Photo Issue

MARCH-APRIL 2018

Bursting at the Seams Whether or not the ever-expanding Northern Continental Divide Ecosystem grizzly population is delisted, FWP will continue to resolve problems between bears and people. By Tom Dickson

This Is Not Okay FWP teams up with Teton Raptor Center to prevent birds from dying a slow, horrific death in outhouses at state parks and fishing access sites across Montana. By Kelsey Dayton

Happy Cows, Happy Trout How a watershed coordinator, a rancher, and an FWP fisheries biologist found a way to conserve water and restore habitat on a Madison River tributary. By John Grassy. Photos by Eliza Wiley

Ready, Willing, and Able Volunteers offer their time, expertise, and passion to help visitors enjoy Montana state parks. By Laura Lundquist

Counting Wolves by Phone How scientists at the University of Montana, FWP, and the U.S. Geological Survey created a more accurate and cost-effective way to monitor the state's wolf population. By Paul Queneau

MAY-JUNE 2018

Searching for Snipe Thought by many to be a fictional creature, Wilson's snipe is actually a common—though extraordinary—shorebird found across the state. By Ellen Horowitz

An Upstream Struggle Two decades after the bull trout was listed as federally threatened, FWP and others continue working to conserve this sensitive salmonid in the face of warmer water, competing fish species, and degraded habitat. By Tom Dickson

Forever Free to Flow Celebrating the 50th anniversary of the National Wild and Scenic Rivers Act—in the state where it all began. By Becky Lomax

One-Stop Shop The new FishMT web application provides everything FWP knows about Montana's fish and fisheries in a single, easy-to-use online location. By Tom Dickson

Soon Fishing photo essay

JULY-AUGUST 2018

Intact How a 10-year FWP project protects one of the nation's largest populations of pure-strain westslope cutthroat trout. By Becky Lomax

Meet the AIS "Pit Crews" With the speed and professionalism of NASCAR support teams, aquatic invasive species inspectors make sure boaters don't transport unwanted plants and animals into Montana's lakes, reservoirs, and rivers. By Tom Dickson. Photos by John Warner

A Century of Saving Birds Since 1918, the Migratory Bird Treaty Act has protected winged wildlife from wanton destruction. A new legal opinion could weaken it. By PJ DelHomme

Connecting People to Great Places For the past 50 years, the National Trail System Act has created a network of trails across the United States. Those and locally created routes in Montana benefit communities, residents, and visitors. By Tom Dickson

Water Wolves Love 'em or hate 'em, there's no denying that northern pike are one of Montana's most fascinating fish. By Jim Vashro

SEPTEMBER-OCTOBER 2018

What Duck Is That? Waterfowl hunters are legally required to identify the species and even gender of the birds they shoot. For everyone else, it's just fun to know which duck is which. By Tom Dickson

Lose Weight Now! Ask Me How! I can help you lose 10 pounds, no dieting required. By Jack Ballard

Up and Running After a shaky start, Spotted Dog WMA is working out well for hunters, nearby landowners, and wildlife. By Paul Queneau

Searching for Swift Foxes FWP biologists in eastern Montana look for a small carnivore making a big comeback in much of its historic range. By Marla Prell

Containing the Spread How FWP is working to keep chronic wasting disease—now confirmed in two areas of Montana—from moving elsewhere in the state. By Peggy O'Neill

Life After CRP FWP offers new upland habitat lease options to help cure eastern Montana's upland bird-hunting blues. By Dave Books

NOVEMBER-DECEMBER 2018

The Healthy Goose Each year the outdoor recreation industry produces "golden eggs" worth more than \$7 billion to Montana's economy. Are we reinvesting enough into natural resources, infrastructure, and conflict resolution to sustain that economic bounty? By Tom Dickson

Becoming Better AmeriCorps workers improve themselves—and their job prospects—while helping make Montana's state parks better places to visit. By Laura Lundquist

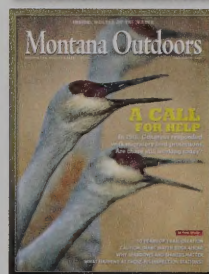
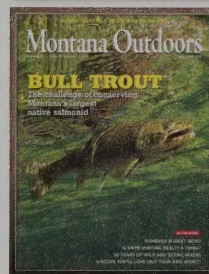
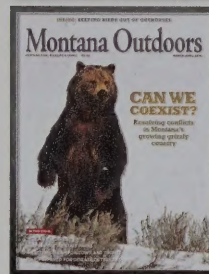
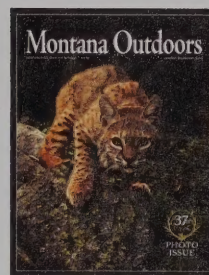
Better Fishing Tomorrow FWP's Future Fisheries Improvement Program betters angling across Montana by restoring and enhancing the places where fish live and reproduce. By Allen Morris Jones

Get Out in It Photo essay

Where Are the Wolverines? In an unprecedented multi-state survey, biologists found the forest carnivores everywhere they thought they should be—along with a few surprises. By Tom Kuglin

BACK ISSUES **ONLINE:** All stories from 2002–2018 issues are available online at fwp.mt.gov/mtoutdoors/. Most back issues of *Montana Outdoors* before 2002, along with issues of most predecessor publications (*Montana Wild Life*, *Sporting Montana*, and *Montana Wildlife*) dating to 1928, are available online at <https://archive.org/>.

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Montana millionaires

BY TOM DICKSON

What a week," I said to the dog as I walked into the living room one evening last August. Mesa offered a sympathetic wag as I collapsed onto the couch. It was only Wednesday.

When my wife came home a bit later, she too complained of a long slog at work. Too weary and dispirited to cook dinner, we threw a container of leftover chicken salad and some day-old rolls into a backpack and headed out of town.

Twenty minutes later we arrived at MacDonald Pass, parked, and walked up a U.S. Forest Service road to the top of a nameless, to us, mountain. Along the way we passed colorful pockets of lupine, Indian paintbrush, and monkeyflower. Beargrass glowed like lanterns against the dark timber. Mesa flushed a blue grouse. In the distance, a thrush made a sorrowful, flutelike call.

From the summit, we could see mountains in every direction: the Garnets, Jack Mountain, the Elkhorns, and, beyond the

Tom Dickson is editor of Montana Outdoors.

Helena Valley, the Big Belts. As I dug in to my chicken salad up on that mountaintop, I felt a weight lift off me, replaced by the calm I always feel after escaping hectic everyday life into open space.

Such freedom is available to almost anyone who lives in Montana. Hike up a nearby trail. Cycle to a local fishing access site and sit on a riverbank. Drive onto BLM land, park, and roll down the window.

A favorite Montana pastime is to complain about how crowded our state has become. The traffic. The lines. Finding a place to park at a boat ramp or trailhead.

On some evenings, the line of cars, SUVs, and pickups backed up on the road outside my office stretches for nearly a mile. The Montana Department of Transportation just announced that "traffic volumes" there are predicted to drastically increase. I'll bet they heard my moan as far away as Ekalaka.

For those of us who moved to Montana from elsewhere, it sometimes seems that our best day here was the day we arrived. As others have followed us to the Treasure State, it's been all downhill.

The traffic delays and sprawling housing developments are even more annoying for those who grew up here and remember when Montana was still undiscovered by all but a few ski bums and trout anglers. Before *A River Runs Through It* and celebrity vacation homes and write-ups in travel magazines. When they had the state all to themselves.

"Montana is full," reads a popular bumper sticker. "I hear North Dakota is nice."

Yet bad as it might seem when you're trying to fish between flotillas of inner-tubers and kayakers, it doesn't take much to put all this "crowding" into perspective. I regularly return to the Twin Cities to visit my parents. That greater metropolitan area is home to three times as many people as live in all of Montana. It's a great place to visit. But, jeez, talk about traffic, and lines, and no parking spots.

Historian Joseph Kinsey Howard, author of *Montana: High, Wide, and Handsome*, once said that what he wanted most in life was "room to swing my arms and to swing my mind..." then added, "Where [but Montana] is there more opportunity to enjoy the elemental values of living, bright sun, and clean air and space? We have room. We can be neighbors without getting in each other's hair. We can be individuals."

In the 75 years since *Montana: High, Wide, and Handsome* was published, the state's population has nearly doubled. But it's still pretty small, relative to almost anywhere else. Opportunities to hunt, fish, camp, boat, and hike remain abundant. We still have room to swing our arms, to be ourselves. There's enough space to be a neighbor without being a bother.

States traditionally measure prosperity in GDP, mineral extraction, industrial output, job growth, livestock production, and the like. Those measures still tell us something. But as the world's population continues to grow, a new form of prosperity may be simply having enough room—to breathe, to wander, to explore. What many people value even more than money is heading out after work and hearing a thrush, seeing wildflowers, and picnicking while looking out over hundreds of square miles.

Montana ranks low in per capita income, and has nearly since statehood. But if open space is the new currency, then those of us who live here are all millionaires. 🐻



Pine grosbeak

Pinicola enucleator By Shane Sater

A clear, querulous *quee-queet* rings out from a snow-covered mountain ash tree, where several sleek, plump pine grosbeaks feed on wrinkled berries. They eat the seeds and drop the skin and pulp, peppering the snow underneath with orange flecks. These dapper birds are hardy residents of Montana's high country and the boreal forest of the far north. The boreal birds winter as far north as the Arctic Circle; in the rare year when they "irrupt" (show up in large numbers) in our lowlands, they bring the essence of the spruce-fir woods to our doorsteps.

IDENTIFICATION

The pine grosbeak is a robin-size finch with a trim, handsome coat of gray body feathers. The tail is charcoal, as are the wings, which have white bars. First-year birds and older females bear a modest touch of yellow or red on the forehead and rump. Males molt into their striking adult plumage after their first birthday, sporting a bright red head, back, and breast.

SOUNDS

To stay in touch, flock members use loud flight calls, which differ between mountain and boreal populations. Montana's mountain grosbeaks give a tremulous *quee-queet*, while the boreal birds whistle a soft *pew pew*. Birds stick with others that share the same flight call. When foraging close together, flock members use short, soft contact calls: *pip pip*. During summer in the mountains, males sing a rich, cheerful warble from treetops.

HABITAT

In summer, look for pine grosbeaks in high-elevation spruce-fir forests near openings and wet areas. In winter, pine grosbeaks move to lower elevations, feeding along shrubby creeks or visiting seed- or fruit-bearing trees in town.

REPRODUCTION

No one has ever documented a pine grosbeak nest in Montana, likely because the habitat is so remote and evergreen needles are so dense. But singing males and fledged young suggest that the species breeds in mountain ranges as far east as the Pryors. June is when female pine grosbeaks use conifer twigs to build well-hidden nests in subalpine forests. Based on observations in other states, the nests are bulky cups of twigs placed on a conifer branch near the trunk, from 6 to 20 feet up. Females incubate three to five pale blue, speckled eggs for about two weeks. Both parents feed the hungry young, delivering a rich paste of insects and plant matter in special pouches in their lower jaw.

DIET

Though the rapidly growing young eat mostly insects and spiders, adults are primarily vegetarian, consuming tree buds, seeds, and berries. Pine grosbeaks are social birds that feed in small flocks for much of the year. They use a surprising variety of foraging techniques, feeding from the ground to treetops. The wide range of plant foods in their diet includes conifer buds and tender new needles, seeds of roadside weeds like burdock, maple tree seeds often called "whirlees" or "helicopters," sunflower seeds at bird feeders, and a variety of berries from mountain ash and other trees and shrubs.

CONSERVATION

Uncommon across a vast swath of northern forests, pine grosbeak populations are hard



SCIENTIFIC NAME

Pinicola is Latin for "pine dweller." An *enucleator* removes the nucleus from a cell, a reference to the way pine grosbeaks remove pit seeds from berries of mountain ash and other fruit trees and shrubs.

to monitor. As a result, biologists know little about their population trends. The annual Breeding Bird Survey suggests rangewide decreases but does not cover much of the breeding habitat. Warming global temperatures will likely shrink the species' breeding habitat. Wintering range is expected to shrink less substantially but will shift northward over the next half-century. In the future, observing pine grosbeaks in Montana may become even more of a treat than it is now. 🐼

Shane Sater is a writer in Helena.

Montana State Library



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**I get off work and where
do I go? Right back
to where I work.**

For those of us who work for FWP, there's no place we'd rather be than outside. Take me, for example: I spend many days on the water, mainly sampling fish populations, only to grab a quick supper and head back for a bit of fishing. I care about this place, and I think that makes me better at caring for it. I'm Adam Strainer. And the outside is in me.

ADAM STRAINER ★ FISHERIES BIOLOGIST ★ HELENA



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